TANKS SOLICITATION

Professional Services Questionnaire

Solicitation # SCC060008

Arizona Department of Environmental Quality
Contracts and Procurement Unit

Experience Profile Code Numbers (for use with questions 9 and 10)

001	Abatement	023	Groundwater Sampling and Monitoring	045	Soil Vapor Extraction
002	Aerial Photograph Review	024	Hydrogeological Assessment	046	Surface Water Quality Standards
003	Air Quality Monitoring	025	Interviews	047	System Installation and Start up
004	Air Sparging	026	Investigative Derived Waste Disposal	048	System Operation and Maintenance
005	Archaeological Studies	027	Laboratory Analysis	049	Tier II Evaluation
006	Bioremediation	028	Monitored Natural Attenuation	050	Treatment System - Groundwater
007	Bore Hole Sampling and Logging	029	Monitoring Well Installation - Groundwater	051	Treatment System - Soil
008	Chain of Title Search	030	Monitoring Well Installation – Vadose Zone	052	Treatment System – Surface Water
009	Chemical Oxidation	031	Multi Phase Extraction	053	UST System Closure / Tank Pull
010	Corrective Action Plan Preparation	032	Permitting	054	Well Development
011	Cultural Resource Survey	033	Pilot Testing	200	
012	Data Evaluation	034	Pump-and-Treat Remediation	201	
013	Data / Document Management	035	Records / Document Review	202	
014	Dual-Phase Extraction	036	Remedial System Design	203	
015	Environmental Sample Collection	037	Report Preparation	204	
016	Fate and Transport Modeling	038	Research of Legal Description	205	
017	Feasibility Study	039	Risk Assessment – Health/Ecological/Toxicological	206	
018	Free Product Recovery / Removal	040	Site Investigation – Phase I	207	
019	Geologic Mapping	041	Site Investigation – Soil / Groundwater	208	
020	Geophysical Surveys	042	Site Reconnaissance	209	
021	GIS Mapping / Database	043	Soil Boring	210	
022	Groundwater Modeling	044	Soil Testing	211	

1. Date Prepared: January 06, 2005

2. Firm Name	Business Address and Primary Phone Number
SECOR International Incorporated	1403 West 10th Place, Suite B-107 Tempe, Arizona 85281 (480) 804-1420 (480) 804-1482 (Fax)

2.1 Submittal is for

[ ] Parent Company [X] Branch or Subsidiary Office

3. Year Present Firm was Established	4. Specify type of ownership and check below, if applicable.		
	a. Small Business	b. Small Disadvantaged Business	c. Women – Owned Business
1992	NA	NA	NA

5. Name of Parent Company, if any:	5.1 Former Parent Company Name(s), if any:	5.2 Year Parent Company was Established:
SECOR International Incorporated	Science Engineering and Analysis Corporation	1989

6. Names of not more than two Principals to contact:

	Name	Title	Telephone Number	Fax Number
1.	Phillip A. Schneider	Managing Principal	(480) 804-1420, 225	(480) 804-1482
	[redacted]	E-Mail Address:	pschneider@secor.com	
2.	Theresa A. Kalaghan	Sr. Project Mgr/Hydrogeologist	(480) 804-1420, 222	(480) 804-1482
	[redacted]	E-Mail Address:	tkalaghan@secor.com	

7. Total Personnel by Discipline: (List each person only once, by primary function)

4	Administrative		Ecologists		Sanitary Engineers	1	GIS/MIS/Sr. Technician
	Archeologists		Electrical Engineers		Soils Engineers	1	Civil P.E./Registered Geologist
1	Biologists		Environmental Engineers		Specifications Writers	1	Natural Resource
2	Chemical Engineers	5	Geologists		Structural Engineers		
	Chemists		Hydrologists		Surveyors		
	Civil Engineers		Landscape Architects		Toxicologists		
	Construction Inspectors	2	Mechanical Engineers		Transportation Engineers		
1	Draftsmen		Risk Assessor			18	**Total Personnel**

8. Summary of Professional Services Fees Received: (Insert Index Number)

Last five years (most recent year first)

	2004	2003	2002	2001	2000
Direct State contract work	5	5	5	4	3
All other domestic work	4	4	4	5	4
All other foreign work	1	1	1	1	0

Ranges of Professional Services Fees "Index"

1. Less than $100,000
2. $100,000 to $250,000
3. $250,000 to $500,000
4. $500,000 to $1 Million
5. $1 Million to $2 Million
6. $2 Million to $5 Million
7. $5 Million to $10 Million
8. $10 Million or greater

9. Profile of Firm's Relevant Project Experience

	Profile Code	Number of Projects	Total Gross Fees		Profile Code	Number of Projects	Total Gross Fees
1.	23	33	$2,000,000	4.	47	13	$520,000
2.	36	15	$170,000	5.	48	14	$1,423,000
3.	41	73	$2,250,000	6.	53	30	363,000

10. Project Examples, Last Five Years

	Profile Code	"P," "C," "SC," or "IE"	Project Name and Location	Owner Name	Owner Phone Number	Cost of Work	Completion Date (Actual or Estimated)
1.	23	P	Broadway Pantano WQARF Site, Tucson, AZ	Gretchen Wagenseller ADEQ	520-628-6708	$600K Current $1.2M Est.	2013 (Estimated)
2.	41	P	ARCO 5283, Phoenix, AZ	Kyle Christie – Atlantic Richfield	714-670-5303	$100K	2001
3.	36	P	ARCO 1523, Phoenix, AZ	Kyle Christie – Atlantic Richfield	714-670-5303	$5.5K	2001
4.	48	P	ARCO 5283, Phoenix, AZ	Kyle Christie – Atlantic Richfield	714-670-5303	~$100K	2005
5.	53	C	Carioca # 33, Phoenix, AZ	Cliff Cogswell – Cochise Contracting , Inc (Prime on the Project.)	602-272-0911	$6K	2005

11. Personnel by discipline: (List each person only once, by primary function.) Enter proposed personnel at the Task Assignment Level on line "A".

A		A		A		A	
4	Administrative		Ecologists		Sanitary Engineers	1	GIS/Sr. Technician
	Archeologists		Electrical Engineers		Soils Engineers	1	Civil P.E./Registered Geologist
1	Biologists		Environmental Engineers		Specifications Writers	1	Natural Resources
3	Chemical Engineers	5	Geologists		Structural Engineers	3	Hydrogeologist
1	Chemists		Hydrologists		Surveyors	1	Certified Industrial Hygienist
1	Civil Engineers		Landscape Architects	1	Toxicologists		
	Construction Inspectors	2	Mechanical Engineers		Transportation Engineers		
1	Draftsmen	1	Risk Assessor	1	Chemist/Risk Assessor	**28**	**Total Personnel**

12. All work by firm currently being performed directly for State Agencies. (list not more then 5 projects)

	a. Project Name and Location	b. Nature of Firm's Responsibility	c. Agency (Responsible Office) Project Managers Name & Phone Number	d. Completion Date (Actual or Estimated)	e. Estimated Cost (In Thousands)	
					Entire Project	Work for Which Firm was/is Responsible
1.	Broadway-Pantano WQARF Site Tucson, Arizona	RI/FS/PRAP Landfill Operable Unit GW Operable Unit Chlorinated Solvents (PCE)	ADEQ – Tucson, Arizona Gretchen Wagenseller (520) 628-6708	06/30/12 (Estimated)	$ 9,000	$ 2,800
2.	East Central Phoenix WQARF Site Phoenix, Arizona	RI/FS, Groundwater Characterization Early Response Actions (SVE)	ADEQ – Phoenix, Arizona Chris Gamache (602) 771-4229	06/30/10 (Estimated)	$ 2,400	$ 1,200
3.	Former Ted's Truck Stop Quartzsite, Arizona	RI/ Groundwater Characterization Early Response Actions (Free Product Recovery)	ADEQ – Phoenix, Arizona Chris Gamache (602) 771-4229	06/30/10 (Estimated)	$ 1,000	$ 500
4.	Silverbell Jail Annex Landfill WQARF Site and Los Reales Landfill WQARF	Consultation Services Related to TI and Remediation Chlorinated Solvents (PCE)	ADEQ – Tucson, Arizona Lori Ehman (520) 628-6663	06/30/15 (Estimated)	$ 4,200	$ 100
5.	ASU SPCC Plans Arizona State University	Prepare and Update the main campus SPCC Plan	ASU – Tempe Arizona Ceresa Stewart (480) 965-0975	12/30/06 (Estimated)	$ 25	$25

13. Work by firm, which best illustrates current qualifications relevant to this contract. (list not more then 5 projects)

	a. Project Name and Location	b. Nature of Firm's Responsibility	c. Project Owner's Name and Project Managers Name & Phone Number	d. Percent Complete	e. Estimated Cost (In Thousands)	
					Entire Project	Work for Which Firm was/is Responsible
1.	ARCO 1443 1201 East Missouri Ave. Phoenix, AZ 85014	Installed and operated a soil vapor extraction/air sparge (SVE/AS) system. Depth to groundwater (GW) ranged from 83-97 feet below the ground surface (fbgs). The GW started w/ a sheen of free product. The site received closure 12-04.	Atlantic Richfield Kyle Christie 714-670-5303	100%	$590	$270
2.	ARCO 5283 3342 North 7th Avenue Phoenix, AZ 85013	Completed assessment, installed, and operated a SVE system. Remediated the soil and GW beneath the site. The depth to GW ranged from 74-84 fbgs surface. Confirmation borings are scheduled for early 2006.	Atlantic Richfield Kyle Christie 714-670-5303	97%	$370	$210
3.	ARCO 5282 4050 North 40th Street Phoenix, AZ 85018	Completed assessment, installed and operated a SVE/AS system. The depth to GW ranged from 25-41 fbgs. The active remediation system has been terminated and the site is under a monitor natural attenuation program.	Atlantic Richfield Kyle Christie 714-670-5303	87%	$400	$216
4.	Barney's Truck Stop Former ARCO 9929 Interstate 8 and Fortuna Rd. Yuma, AZ	Operated a diesel fuel free product recovery and a bio-vent soil remediation system that was installed by staff when they were at another firm. The site is under a monitor natural attenuation program with periodical free product recovery.	Atlantic Richfield Kyle Christie 714-670-5303	89%	$750	$210
5.	7-Eleven # 23215 3948 E. Thomas Rd. Phoenix, AZ 85018	Completed assessment, CAP, and Design. Scheduled to install and operated SVE/AS system in 2006. The depth to GW ranged from 18-37 fbgs.	7-Eleven, Inc. Ken Hilliard (214) 841-6592	23	$500	$400

14. Brief resume of key persons, specialists and individual consultants/associates anticipated for this contract:

Name of Individual Benjamin Ford	Title Senior Computer Aided Design (CAD) Technician
Personnel Classification/Level (*Reference ASRAC Statement of Work Table 1*) Professional Level III	Area of Expertise Database, GIS, Auto CAD
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Auto CAD, GIS, and Database	Education A.S., CAD Technology, 1996 B.S., CAD Technology, 1997

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
8	8	None

Employment History

	Firms Name	Start Date	End Date
1.	Food Service Concepts	03/1996	08/1997
2.	Allied Signal	08/1997	02/1998
3.	SECOR International Incorporated	02/1998	Present
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Executive Summary of Career Highlights

Mr. Ford has eight years of professional experience as a CAD Technician while functioning as a MIS Specialist on various projects while working for SECOR. Mr. Ford is proficient in the use of AutoCAD, Excel, Word, Access, ArcView, and Various GIS programs. Mr. Ford also is the Assistant Network Administrator for the Phoenix office of SECOR International Incorporated (SECOR). Prior to Mr. Fords CAD experience, he was a computer technician for four years. His project experience is presented below.

Design and maintain GIS database for Arizona Army National Guard depicting meteorological monitoring station locations, soil sampling, and soil boring locations, and articulated concrete mat crossings which are linked to topographic maps.

GIS Specialist, responsible for mapping hundreds of miles of petroleum pipelines for Unocal, Kinder-Morgan Energy, Shell Oil Company and Valero Oil Company.

Assisted in the design of landfill and provided draft and final construction drawings as well as volume and run-off calculations.

Participated in the design of approximately 10 Soil Vapor Extraction/Air Sparge remediation systems including system and piping layout, electrical and gas utility connections, traffic control for construction purposes, detailed construction drawings for trench layout.

Provide quarterly and semi-annual groundwater gradient, water, and soil quality drawings for on-going remediation and assessment projects throughout Arizona and in various locations in California.

Contributed to the design of wastewater recovery/treatment and wastewater recycle systems and provided draft and final construction drawings.

Facilities drafting for large aerospace company including office space design (from initial concept planning and budgeting to occupancy), electrical, mechanical and HVAC drafting.

Architectural drafting for food service industry including design and layout of restaurant interior (seating arrangement, traffic flow patterns, kitchen and food service layout), and exterior building amenities (parking lot layout, traffic patterns, compliance with Universal Building codes for occupancy limit and ADA compliance).

MIS Manager, installed and maintained Windows network. Responsible for all computer and network server installations and maintenance.

Diagnosis and minor repair of computers and audio/video equipment. Installation of computer peripherals (CD-ROMs, Modems, Soundcard, etc.).

14. *Continued:*

Name of Individual	Title
Stephanie French	Project Manager
Personnel Classification/Level (*Reference Attachment IV and 16*)	Area of Expertise
Professional Level III	Phase I/II ESA's, Site Characterization and Remediation
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*)	Education
Project Manager	B.S. in Chemical Engineering, Arizona State University, 1997

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
8	8	

Employment History

	Firms Name	Start Date	End Date
1.	Arizona Department of Environmental Quality	01/99	11/00
2.	HDR, Incorporated	11/00	08/01
3.	Geotechnical & Environmental Consultants	12/01	02/05
4.	Groundwater & Environmental Services, Incorporated	02/05	01/06
5.	SECOR International Incorporated	01/06	Present
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Executive Summary of Career Highlights

Ms. French assisted in directing an underground storage tank (UST) investigation at a former trading post along the Old Route 66 in Winslow, Arizona. She was responsible for overseeing the removal of USTs and characterizing the extent of soil and groundwater contamination resulting from identified releases. During field investigations, she coordinated with ADEQ's project manager on the relocation of exploratory soil borings and groundwater monitoring well installations based on current site conditions.

Ms. French served on the project level conducting Phase I and Phase II Environmental Site Assessment (ESAs) on a wide variety of properties including vacant land, agricultural facilities, and commercial properties. She conducted Phase II investigation at agricultural facilities and was responsible for directing exploratory excavation activities in suspect areas, identifying impacted areas, sampling and testing to delineate the extent of impacted areas, data evaluation, and technical report preparation. Ms. French assisted with remedial efforts for a large agricultural property coordinated through the Arizona Department of Environmental Quality (ADEQ). She was responsible for the delineation of soils impacted with petroleum hydrocarbons, the pesticides toxaphene, 4,4-DDT, and the herbicide dinoseb; the preparation of a site characterization report, remedial work plan, and Quality Assurance Project Plan for ADEQ's approval. She also assisted in the closure of former USTs located within a maintenance facility at the property. Ms. French assisted during emergency response situations performing conformation sampling and testing to delineate the extent of impacted soil and ensure the clean-up of the impacted soil.

Ms. French assisted in providing regulatory compliance to a large manufacturing facility. She was responsible for the preparation of air permits and SARA Title 313 reporting.

Ms. French performed emission analysis in the design and evaluation of abatement systems for semi-conductor fabrication facilities. She provided analysis of accidental release scenarios for hazardous chemicals stored. The analysis included release rate and concentration calculations for the design of ventilation and abatement systems. Ms. French performed general design calculations for semiconductor fabrication facilities including the sizing of piping and equipment, calculation of heat load and cooling requirements, and determination of process gas, bulk chemical, and electrical requirements for instruments in the main fabrication process.

Brief Resume Continued

Ms. French served as a technical expert in the development of air quality control permits to ensure that facilities are complying with all federal, state, and local regulations. Responsibilities included the calculation of process emissions from facilities, evaluating control technologies, determining all applicable regulations and standards, and working with companies to achieve compliance with set standards. She assisted in the development of new policies to better serve the interest of industry, public health, and the environment. She coordinated with other regulatory agencies, and held stakeholder and other public meetings to address concerns from industry and the public.

14. *Continued:*

Name of Individual	Title
Melissa Lawrence, EIT	Staff Engineer
Personnel Classification/Level (*Reference ASRAC Statement of Work Table 1*) Professional Level III	Area of Expertise Engineering Design and System Operation-and-Maintenance
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Staff Engineer	Education B.S. Chemical Engineering, 2000

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
5	5	Engineer-in-Training (OH 2000)

Employment History

	Firms Name	Start Date	End Date
1.	Shaw Environmental, Incorporated	07/00	04/03
2.	SECOR International Incorporated	12/03	Present
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Executive Summary of Career Highlights

Ms. Lawrence is a chemical engineer with five years of related experience. Ms. Lawrence's environmental experience includes site characterization, soil/vapor/groundwater sampling, and monitoring well installation, soil vapor extraction/air sparge treatment design (petroleum and chlorinated solvent), Phase I Environmental Site Assessments, emissions inventories and reports, SARA Title III compliance reporting, development of companies' Department of Transportation (DOT)-regulated pipeline compliance programs, and environmental compliance auditing/reporting. Her project experience is presented below.

Site Remediation

Assisted in design of air sparge/ soil vapor extraction (AS/SVE) treatment system for two former dry cleaner facilities at a WQARF site in Arizona. System includes AS compressor, SVE blower, and 2 granular activated carbon vessels. Supervised installation of AS/SVE treatment system at both facilities. Installation activities included digging horizontal piping trench, connecting pipe to existing wells, backfill and cover trench, build and connect pipe manifold to AS/SVE systems, and install electrical power supply. Developed performance monitoring spreadsheets, graphs, and calculations for system operation, and prepared periodic performance reports for submittal to the client. Coordinated site activities, including routine O&M, carbon vessel exchanges for spent carbon, and vapor performance sampling.

Performed routine O&M on thermox/catox SVE treatment systems at gasoline stations. Duties include weekly/monthly operating data collection and system optimization as necessary.

Site Characterization/Sampling

Conducted Underground Storage Tank removals in Arizona that included collection or soil samples, determination of potential releases, and report preparation/agency reporting.

Performed groundwater monitoring and sampling using bailers, peristaltic pumps, bladder pumps, and Grundfos pumps.

Brief Resume Continued

Collected water level measurements and field sampling parameters for groundwater temperature, pH, conductivity, dissolved oxygen, oxidation-reduction potential, and turbidity. Performed grab, purge, low-volume purge, and micropurge sampling; determined purge volumes based on well conditions. Prepared periodic groundwater monitoring and sampling reports for Arizona WQARF sites.

Supervised monitoring well installation activities at 4 sites using hollow-stem auger, Stratex, and Rotosonic drill rigs.

Collected surface soil samples at a former skeet shooting range for lead analysis. Prepared sifted and unsifted samples for each sample location for laboratory analysis.

Supervised soil excavation activities and collected confirmation samples.

Environmental Reporting

Completed SARA Title III Toxic Chemical Release Inventory annual reports for a motor vehicle assembly plant. Verified chemical components in plant inventory system with MSDS for all products used in the plant, used process-driven calculations to estimate releases for each chemical component, and completed Form R reports for submission to the US EPA.

Completed annual air emission inventory for an aircraft engine manufacturing, maintenance, and research facility. Verified completeness of facility inventory, created calculations for emissions for various fuel-burning processes, updated records of other various plant processes and verified emissions calculations methods.

Acted as Quality Control Manager and Site Health and Safety Officer for a demolition project at an Army Reserve Center coordinated by the Army Corps of Engineers. Served as main liaison to USACE during demolition; reported daily activities, materials removed from or delivered to site, and ongoing work progress and schedule. Conducted hazardous waste determinations in accordance with 49 CFR 262 to confirm that various water, soil, and surface wipe samples to verify demolition waste was non-hazardous. Conducted daily air monitoring in belowground missile silos during cleaning activities before main structure demolition.

Performed Phase I Environmental Site Assessments (ESA) at four properties. Conducted site walk, employee interviews, aerial photo reviews, EDR data package reviews, and public records reviews.

DOT Regulated Pipeline Compliance

Developed compliance programs for DOT-regulated hazardous liquid and natural gas pipelines. Created an Operations and Maintenance (O&M) Manual for a DOT-regulated gas pipeline. Prepared public awareness programs for DOT-regulated hazardous liquid and gas pipelines according to the American Petroleum Institute's Recommended Practice 1162 guidance document.

Prepared gap analysis audits of integrity management programs for DOT-regulated hazardous liquid pipelines using DOT protocols for multiple operators. Revised hazardous liquid integrity management program based on audit findings and recommendations. Developed an Integrity Management Program for a DOT-regulated fuel gas pipeline. Developed operator qualification plan framework using a DOT protocol. Created pipeline safety training presentation and reference manual containing overview of regulatory agencies, pipeline safety regulations, and operator's pipeline safety programs.

14. *Continued:*

Name of Individual	Title
Elizabeth A. Cost, CHMM	Regulatory Specialist
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level IV	Area of Expertise Environmental Regulatory Compliance, Health and Safety Program Management
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Regulatory Specialist	Education B.A., Chemistry, 1982

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
20	14	Certified Hazardous Materials Manager, 1988

Employment History

	Firms Name	Start Date	End Date
1.	Skyline Laboratories	08/81	06/84
2.	Tempress/Xynetics [General Signal Div.]	06/84	05/86
3.	Touchstone Industries	05/86	09/87
4.	Regulatory Compliance Consultants	10/87	04/90
5.	Emulsitone Company NOTE: Simultaneous Employment with Engagement No. 4	10/87	04/90
6.	Winross Company, Incorporated	10/90	10/95
7.	SECOR International Incorporated	02/96	Present
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Executive Summary of Career Highlights

Data Validation Specialist responsible for quality assurance/quality control (QA/QC) data validation of soil gas sample data sets collected during the characterization of the Landfill Operable Unit (LOU) at the state-lead Broadway-Pantano Water Quality Assurance Revolving Fund (WQARF) Site in Tucson, Arizona.

Regulatory Specialist for a national environmental consulting firm responsible for managing environmental health and safety projects for client companies. Responsibilities also included planning, researching, and implementing waste characterization and disposal programs for numerous RCRA hazardous waste generators. Other duties have included conducting indoor and emission air quality surveys, environmental audits, laboratory audits and QA/QC data validation for hazardous waste management projects being performed under the provisions of RCRA and/or CERCLA.

Environmental Director for a model truck manufacturing company in New York. Primarily responsible for the administration of environmental, health and safety, security, and process engineering and a quality engineering programs within the company. Also assured that the company complied with OSHA, RCRA, and pertinent state and local statutes and regulations. Analyzed zinc die casting, cleaning, and painting processes to determine possible sources of defects, waste generated, and material contamination impacts. Tested new materials and manufacturing procedures, and developed solutions for identified problem areas.

Data Validation Specialist responsible for QA/QC data validation of extensive sets of environmental sample data (typically including soil, soil gas, groundwater, and occasionally including surface water and leachate) for federal-lead and state-lead Superfund and RCRA-equivalent projects. These projects included federal and/or state-lead Superfund assessments and corrective actions at sites in Michigan and Ohio; RCRA Corrective Action (CORRACT) programs at sites in Colorado, Kansas, Montana; and consent order-driven refinery cleanups in Colorado, Louisiana, and Oklahoma. Also performed data

Brief Resume Continued

validation for extensive sets of environmental sample data for a refinery closure for a major oil company at a decommissioned refinery site in Missouri; for a landfill closure for a major oil company at a site in Arkansas; for major property acquisitions involving dozens of sites in multiple states where subsurface soil and groundwater sampling were required by an energy development company (at natural gas plants and associated compressor stations in Louisiana, Oklahoma and Texas); for pre-sale assessments at railyards and fueling sites across the United States for railroad holding companies; and for pre-purchase property acquisitions for the U. S. Postal Service at two sites in Alaska.

Vice President of Technology for a regulatory compliance consulting company in New Jersey responsible for producing full SARA Title III reports and documentation involving Sections 302, 311, 312, and 313. Provided services to 60 client companies in areas such as generating Material Safety Data Sheets (MSDSs), environmental monitoring, environmental compliance audits, and reporting. Duties also included OSHA "right-to-know" reporting and employee training, hazardous waste reporting and management, management of waste minimization programs, and processing of air and water permit applications.

Chief Chemist for a specialty chemical manufacturing company in New Jersey. Responsible for coordinating the batch processing of specialty formulations for use in semiconductor manufacturing; scheduling of materials, shipping and receiving; assuring quality control; supervising office and technical staff; and developing new products and/or documentation procedures.

Chemist responsible for performing various materials testing procedures, including gas chromatography, viscosity, atomic absorption, standard wet chemistry methods. Also conducted testing of the electrical and diffusion characteristics for various films and thin-layer substances.

Senior Process Engineer in the Research and Development (R&D) section of a technology/semiconductor process consulting company in San Francisco, California. Involved in the development of several new processes, including one for borophosphosilicate glass for which the published results became the industry standard. Also was responsible for testing and analyzing the proper operation of various client-owned semiconductor process equipment, included low-pressure chemical vapor deposition (LPCVD) water furnaces and CYBEQ the crystal-growing furnaces.

Chemist/Process Engineer for a semiconductor process equipment company in Santa Clara, California involved in R&D of various systems for semiconductor production, including low temperature oxygen, LPCVD, diffusion and atmospheric furnace. Also responsible for performing international on-site customer evaluations related to increasing production yields within existing company frameworks and/or implementation of new procedures. Other duties included debugging and testing of new equipment, and analyzing the chemical and physical properties of the deposited films.

Chemist for a geochemical analytical testing laboratory in Colorado. Responsible for proper operation of atomic absorption spectrometers and inductively-coupled plasma machines for geochemical analyses of potential ore deposits. Developed a procedure to detect tellurium at part-per-billion levels. Concurrently functioned as a consulting chemist to a mining/mineral exploration company in Colorado, for whom she devised multi-element extraction analytical procedures (including sample preparation methodologies and appropriate instrumentation) to improve the effectiveness of its mineral exploration program.

14. *Continued:*

Name of Individual	Title
Reneé V. Hilton, Ph.D.	Environmental Chemist
Personnel Classification/Level (*Reference Attachment IV and 16*)	Area of Expertise
Professional Level IV	Environmental Statistics, Risk Assessment
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*)	Education
Project Chemist/Project Toxicologist	B.S., Geology (Environmental Chemistry emphasis), 1996 M.S., Toxicology; Environmental Geochemistry minor, 1998 Ph.D., Environmental Science and Engineering, 2003

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
9	5	

Employment History

	Firms Name	Start Date	End Date
1.	The Ohio EPA Division of Groundwater	08/99	08/00
2.	The University of Texas Department of Civil Engineering	08/00	06/03
3.	SECOR International Incorporated	07/03	Present
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Executive Summary of Career Highlights

Ms. Hilton has five years of experience as an environmental geochemist performing groundwater statistics, quality assurance/quality control (QA/QC) data analysis, and determination of contaminant fate-and-transport for a variety of hazardous contaminants; five years experience as a laboratory research scientist; and one year as a field toxicologist. She was laboratory co-manager for the Environmental Laboratory at The University of Texas at El Paso. Her representative project experience is presented below.

Risk Assessment

Project Toxicologist responsible for completing a Human Health Risk Assessment (HHRA) to evaluate the impacts of vapor intrusion into a subdivision located adjacent to a closed municipal landfill in Tucson, Arizona. The contaminants of concern included PCE and TCE.

Project Toxicologist responsible for completing an HHRA for a polychlorinated biphenyl (PCB)-impacted site in Union City, Indiana.

Project Toxicologist responsible for performing deterministic and probabilistic computations for a site-wide Air Quality HHRA at a factory in Berkeley, California.

Project Toxicologist responsible for conducting an indoor air HHRA for the Nela Park General Electric Facility in Cleveland, Ohio.

Project Toxicologist responsible for conducting an HHRA for the former aluminum manufacturing plant in Gnadenhutten, Ohio.

Project Toxicologist responsible for determining the fate of organic pesticides in soils. This research project included determining the extent to which natural processes (e.g. volatilization, biodegradation, photolysis, hydrolysis, etc.) could accelerate the breakdown of pesticides at heavily polluted environmental sites.

Brief Resume Continued

Geochemist

Project Geochemist responsible for performing statistical analysis, geochemical interpretations, and data QA/QC for the Uvalde site in San Antonio, Texas.

Principal Investigator responsible for analyzing and determining the nature, severity, and extent of petroleum hydrocarbon impacts in soil, soil gas, and groundwater for a private resident in Massillon, Ohio.

QA/QC Manager responsible for developing the QA/QC documentation and standard operating procedures for the mobile analytical laboratory operated by Compliance Solutions, Incorporated.

Environmental Chemist responsible for monitoring methane concentrations, groundwater levels, and subsurface temperatures at Matousek Landfill (a closed municipal solid waste landfill) in Cleveland, Ohio. Also responsible for updating the annual report for this facility.

Environmental Chemist responsible for conducting site characterization assessments to determine the extent of toxic metals contamination at an abandoned lead mine in Barberton, Ohio.

14. *Continued:*

Name of Individual	Title
Kellie Huston	Senior Project Manager
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level IV	Area of Expertise Phase I/II, Site Characterization, Remediation, Regulatory Compliance
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Project Manager	Education B.S. in Natural Resource Conservation & Management, University of Kentucky, 1998 Graduate Studies, MBA with a Masters in Project Management, DeVry University

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
18	9	

Employment History

	Firms Name	Start Date	End Date
1.	Department of Environmental and Emergency Management	07/98	12/98
2.	SECOR International Incorporated	03/99	05/00
3.	Geotechnical & Environmental Consultants	05/00	12/04
4.	Groundwater & Environmental Services Incorporated	01/05	12/05
5.	SECOR International Incorporated	01/06	Present
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Executive Summary of Career Highlights

Ms. Huston is a Senior Project Scientist/Project Manager with a variety of experience on environmental investigations and studies. Ms. Huston's professional experience is primarily focused on Phase I and II Environmental Site Assessments (ESAs) for property transfers on a wide variety of properties. Ms. Huston has provided an array of environmental services to several high profile projects including the Arizona Department of Environmental Quality (ADEQ) office building, the Chandler Fashion Center, the Cardinals Stadium, Scottsdale Waterfront, and several master planned communities such as Desert Ridge, Anthem, Palm Valley, Surprise Farms, and Sierra Montana. She has also conducted numerous Phase I/II ESAs for private companies, including several regional and national land development companies, a national grocery and drugstore chain, and national investment banks. These assessments included such properties as industrial, commercial, warehouse facilities, multi-family residential complexes, agriculture lots, manufacturing, semiconductor, vehicle maintenance, mining, landfill facilities, and retail shopping centers. She has developed recommendations, scope of work, and completed remediation services for many of these ESAs.

Ms. Huston has a strong background involving regulatory, OSHA, and health and safety compliance. Ms. Huston's functions include: planning and conducting worksite inspections to identify safety hazards; preparing Health & Safety Plans; developing controls or work practices to minimize or eliminate hazards; conducting safety training; drafting policies and procedures at a corporate level; reviewing and maintaining OSHA and other records; and performing other related duties. Ms. Huston is responsible for quality control and quality assurance (QA/QC) of site-specific Health and Safety Plans for hazardous waste sites for compliance with OSHA regulations. Ms. Huston has performed a multitude of site inspections for compliance with environmental regulations such as RCRA, OSHA regulations, corporate health and safety policies, and compliance issues related to Spill Prevention Control and Countermeasures plans, and Stormwater Pollution Prevention plans. Ms. Huston has also written emergency response plans, hazardous materials management plans and inventory statements, and environmental compliance manuals. Ms. Huston provides training seminars at the corporate level and on-site training exercises for field personnel. Ms. Huston has developed numerous site-specific Health & Safety Plans, and has been retained to represent state

Brief Resume Continued

and city interests during development of publicly-owned properties.

Ms. Huston's UST experience includes soil and groundwater investigations and assistance with compliance issues for "found" USTs. Her UST involvement includes preparation of reports for notification, release, site characterization, and closure. In addition, Mr. Huston has prepared and reviewed reports to obtain UST Closure with deed restrictions.

Ms. Huston provides regulatory compliance services to several large industrial facilities located in the metropolitan area. Services include advisement and assistance during EPA and ADEQ inspections, environmental compliance audits, Tier I and II reporting, Title V and non-Title V air permitting, emissions inventory reporting, Stormwater Pollution Prevention Plans, surface water monitoring, spill prevention control and countermeasures, Form A/Form B reporting, and various other environmental reporting.

14. *Continued:*

Name of Individual	Title
Theresa K. Jones	Senior Project Manager
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level IV	Area of Expertise Site Characterization/Remediation, UST Management, Hazardous and Regulated Waste Management
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Project Manager, Senior Hydrogeologist	Education B.S., Geology; Environmental Science minor, 1992

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
13	13	None

Employment History

	Firms Name	Start Date	End Date
1.	Delta Environmental Consultants, Inc. (Staff Hydrogeologist)	04/92	04/95
2.	Blaes Environmental Management, Inc. (Project Geologist to Project Manager)	04/95	06/98
3.	Granite Environmental, LLC (President)	06/98	05/05
4.	SECOR International Incorporated (Senior Project Manager)	05/05	Present
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Executive Summary of Career Highlights

Ms. Jones has more than 13 years of progressively increased responsibility as an environmental geologist and hazardous materials manager, working in states across the continental United States (Arizona, California, New Jersey, New Mexico, New York, Pennsylvania, Rhode Island, Texas, and Utah). Her clients have included several major (nationwide) and minor (regional) oil companies, several local school districts, the Arizona Department of Transportation (ADOT), the City of Tucson Environmental Services division, general contractor construction companies, a copper mining company, a natural gas/liquid pipeline company, a truck rental firm, redevelopment agencies, law firms, and several of the Indian Nations. Representative experience is provided below.

Portfolio Manager for several major oil companies, responsible for day-to-day underground storage tank (UST) management of portfolios of gasoline-dispensing facilities. Most of the facilities were automotive service stations with convenience stores. These facilities were located in the Phoenix, Tucson, and Yuma, Arizona greater metropolitan areas. Planned and directed site characterization/remediation activities for known or suspected leaking UST systems (LUSTs). For many sites, also oversaw the removal of UST systems and/or provided oversight services during vapor line upgrades. Coordinated periodic groundwater monitoring for hydrocarbon-impacted groundwater sites. For sites with only vadose zone impacted soils, planned and implemented corrective actions typically including soil vapor extraction (SVE) and/or remedial overexcavation. Prepared written reports to document all field activities, and to summarize the findings and present the conclusions and recommendations.

Program Manager responsible for providing UST management and regulated waste/hazardous waste management services to several Indian nations, including the Salt River/Pima-Maricopa Indian Community and the Navajo Nation. For the former, managed UST systems at a municipal facilities complex that included several maintenance garages and a juvenile detention center. For the latter, provided UST management for remote gasoline-dispensing facilities at tribal schools and retail gasoline stations.

Program Manager responsible for providing UST management services to a nationwide truck rental company at refueling facilities co-located with the truck rental centers throughout Arizona. Planned, directed and/or implemented site characterization assessments, oversaw UST system removals, conducted remedial overexcavations (as needed), and installed and operated soil vapor extraction (SVE) systems and/or air sparging (AS) systems to mitigate hydrocarbon impacts to vadose zone soils and/or groundwater.

Brief Resume Continued

Project Geologist responsible for implementing site assessment activities at a transfer facility for a regional natural gas/liquid pipeline company. The field work entailed soil sampling of test pits and soil borings to evaluate the nature, severity, and extent of petroleum hydrocarbon impacts to vadose zone soils. Also responsible for overseeing the selected remedial option, which was remedial overexcavation with subsequent backfilling and compaction in multiple thin lifts. Prepared site assessment and remedial progress reports to document the results of the field activities.

Staff Geologist to Senior Project Manager, responsible for conducting site assessment/remediation activities at retail gasoline service stations owned and/or operated by a major oil company. Most of the gasoline-dispensing facilities were located in Arizona, southern California, Texas, New Mexico, and Utah.

Project Geologist responsible for performing a Phase II Environmental Site Assessment (ESA) at several remote sites that included maintenance yards and a law enforcement facility. Drilled and sampled numerous soil borings to determine the nature, severity, and extent of petroleum hydrocarbon impacts to vadose zone soils at the sites. Prepared written site assessment reports to document the results of the field work.

14. *Continued:*

Name of Individual	Title
Ryan Sanders	Sr. Project Manager
Personnel Classification/Level (*Reference ASRAC Statement of Work Table 1*) Professional Level IV	Area of Expertise Assessment and Remediation
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Project Manager	Education B.S. Engineering Mathematics, 1991 B.S. Mechanical Engineer, 1993

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
8	8	Engineer In Training, 1993

Employment History

	Firms Name	Start Date	End Date
1.	Delta Environmental Consultants, Inc.	09/1993	10/1997
2.	Arrowhead Aquascapes, Inc.	10/1997	11/2005
3.	SECOR International Incorporated	11/2005	Present
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Executive Summary of Career Highlights

Mr. Sanders has over 8 years of professional design engineering and consulting experience. He has been involved with subsurface contamination projects including remediation design (air sparging, soil vapor extraction, bio-venting, free product recovery, and groundwater pump-and-treat), Phase I Environmental Site Assessments, subsurface drilling, well installation (groundwater monitoring, air sparge, and soil vapor extraction), soil and groundwater sampling, air quality, wastewater sampling projects, and the development of spill prevention control and countermeasure plans. The remedial systems Mr. Sanders has designed or has been the primary implementation engineer have been for the removal of chlorinated solvents and petroleum hydrocarbons in soil and groundwater. His consulting project experience is summarized below.

Remedial Design

Developed corrective action plans. Designed and managed construction of single and multi-component remediation systems for soil and groundwater at numerous petroleum related sites. These systems include free product recovery systems, bio-venting, air sparging, soil vapor extraction, and pump and treat. Passive biodegradation for both groundwater and soil remediation has been successfully utilized when warranted.

Served as engineer responsible for the design, installation, and monitoring of a free product removal/bio-vent system installed to remediate a diesel fuel release at a major oil company site in Yuma, Arizona. The system is operating to the designed specifications.

Task Manager accountable for the design, installation, and monitoring of a 400-foot groundwater interceptor trench system for the Arizona Department of Environmental Quality. The interceptor trench was designed and installed to stop the flow of hydrocarbon-impacted groundwater from seeping from a road cut and into the ditch along I-40. The system incorporated a carbon treatment system to remediate the collected groundwater, and the effluent discharged into the sanitary sewer.

Brief Resume Continued

Site Characterization
Managed a site assessment/remediation in Kingman, Arizona. The project included defining the lateral extent of chlorinated solvent-impacted soil, excavating, back filling, preparing a closure report.

Managed site assessment activities in Arizona for a major oil company. Tasks included the installation of soil borings, groundwater monitoring wells, and implementation of a groundwater sampling program. Hollow stem auger and percussion hammer drilling methods were utilized in the characterization activities. Biodegradation data was collected and a natural attenuation CAP was developed.

Spill Prevention and Countermeasure Control Plans
Served as Project Engineer responsible for the preparation of a SPCC plan and an Installation Spill Contingency Plan (ISCP) for two Arizona Army National Guard facilities. The projects involved reviewing all of the facility operations, making recommendations for engineering controls and modifications to facility operations, and preparing the SPCC plans. The ISCP involved establishing responsibility, listed the pre-planned roster of people and equipment, and described the emergency response action for detecting, containing, and cleaning up a hazardous release or spill.

Air Quality
Served as Project Engineer responsible for conducting an emission inventory at a hosiery production facility. As a result of the inventory, a Title V Permit was not required and the appropriate permitting documentation was submitted to exempt the facility from the Title V Air Permitting Process.

Prepared Air Permits for the operations of thermal, catalytic, and granular activated carbon remediation units.

Waste Stream Sampling
Project Manager for a truck leasing company's project in Phoenix, Arizona. Tasks included collecting wastewater samples and providing the client with information required to meet the city reporting requirements to discharge directly into the city sewer system.

Underground Storage Tank Removals
Served as Project Engineer/Task Manger for numerous underground tank removals, preliminary investigations, tank removals, and additional subsurface investigations in Arizona. Clients for these projects included oil companies, state agencies, county agencies, and municipalities.

Provided Project Engineering Support on the UST system upgrade program at a major university in Arizona. The program involved removing two 40,000 gallon USTs on the main campus, designing and installing an upgraded UST system, and a temporary fueling system. The UST system provides diesel fuel to power generators for the Central Plant Facility and maintaining a continuous fuel supply, which was critical to the project success. Conducted continuous, on-site construction management and subsurface assessment services such as re-directing traffic including emergency vehicle routing, and maintaining uninterrupted fueling services.

14. *Continued:*

Name of Individual	Title
Todd L. Leonard, CEM	Project Scientist
Personnel Classification/Level (*Reference Attachment IV and 16*)	Area of Expertise
Professional Level V	Risk Assessments
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*)	Education
Risk Assessment	B.S. Environmental Science, 1994 M.S. Ecological Toxicology and Risk Assessment, 1997

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
9	9	CEM - Nevada

Employment History

	Firms Name	Start Date	End Date
1.	SECOR International Incorporated	03/97	Present
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Executive Summary of Career Highlights

Mr. Leonard has nine years of professional experience in the environmental industry. His background includes risk assessments, ecological fate and transport modeling of heavy metals, atmospheric dispersion modeling, ambient air sampling, point source air emission testing, OSHA compliance air sampling, site characterization, remediation system installation and operation, and construction management. Mr. Leonard has managed numerous air permitting projects, Phase I/II Environmental Site Assessments, and provides project and field management services for remediation, investigation, and mitigation projects. Additionally, he has managed several projects that required management of materials pursuant to environmental compliance regulations in RCRA, CERCLA, CWA, and CAA

Risk Assessment
Conducted a risk based closure assessment at a site with chlorinated hydrocarbon impacted groundwater. The analysis included interpreting local hydrogeology, groundwater and contaminant fate and transport models, and the physical and chemical characteristics of the contaminants and their subsequent daughter products.

Provided risk assessment analysis for a nitrogen trifluoride gas production facility, where an explosion had occurred. Presented results of the engineering evaluation and worst-case release scenario analysis at a public meeting.

Used flux chamber data to calculate potential indoor and outdoor worker exposure to solvent emissions at an industrial facility in Utah with free-product solvent plumes in the groundwater.

Conducted a fate and transport analysis for a mercury release that occurred during a fire. The analysis included conducting air dispersion modeling, and performing a mass balance evaluation based on mercury speciation and material testing.

Site Characterization and Remediation
Provided technical oversight for abatement activities for MTBE contaminated groundwater at sites in South Lake Tahoe, California. Activities included site characterization, remediation system installation and operation, construction management and air quality monitoring and permitting.

Provided project management for the removal of leaking USTs and associated hydrocarbon impacted soils in Kings Beach, California. Services included permitting, and site characterization through drilling, soil and groundwater sampling, and support for petroleum fund reimbursement.

Brief Resume Continued

Managed the site characterization and remediation of hydrocarbon-impacted soils and groundwater at a natural gas plant in Wyoming, and conducted quarterly groundwater monitoring and sampling at this site.

Air Quality
Performed point source air emission testing for mercury and organic compounds at a Department of Defense Battery Reclamation Facility. Testing included sampling method selection, validation and modification. The data collected was used to quantify total maximum and average annual mercury and organic compound emissions and to provide evidence to the regulators that no air quality permit was required.

Conducted indoor ambient air monitoring for mercury and organic compounds in an industrial facility to determine potential worker exposure and to support the design of the ventilation system.

Designed and implemented a program for ambient air monitoring during a pesticide emergency response at an Indian Reservation in northern Nevada to determine risks of off-site exposure.

Designed and implemented a program for ambient air monitoring for PCE at an Indian Reservation in California to evaluate potential human exposure in a facility where a PCE release was suspected.

Provided project management and participated in regulatory negotiations to acquire an air quality permit and avoid fines for a polyacrylics manufacturing facility in Fernley, Nevada. The facility emits volatile organic compounds and was constructed and operated without an air pollution control permit.

Participated in stack testing for emissions of particulate matter and lead from a bearing manufacturing company in Carson City, Nevada. Conducted a review of the air quality permit application and met with the regulatory agency to negotiate the permit parameters.

Calculated and prepared annual emissions reports and Toxic Release Inventory reports for natural gas combustion from an aluminum piston manufacturing facility in Carson City, Nevada for submittal to state and federal regulators.

Prepared a Class II Air Quality Permit Modification Application for an industrial facility that required dispersion modeling for natural gas constituent emissions.

Collected and analyzed atmospheric mercury samples from field sites and determined rates of mercury evasion from soil and surface waters. Co-authored publications and presented research at national meetings.

Landfills
Developed an amendment to the Nevada Landfill Permit to Operate to establish acceptance and monitoring criteria for hydrocarbon impacted soils.

Performed a comparison digitized aerial photographs of a Nevada landfill from April 1999 to June 2001 to determine the cumulative total of waste and soil added to the landfill over this period, and to estimate the total annual waste and soil input.

Research and Development
Provided scientific support for a military project to recover mercury and other heavy metals from various Department of Defense materials, primarily consisting of batteries. Activities included RCRA compliance and permitting, regulatory negotiation, emission modeling, process design, system analysis, analytical laboratory development, health and safety support, and research and development of new recycling processes to expand the facilities capabilities and funding.

Constructed and operated a system to measure mercury-rich and methyl-bromide-rich gas exchange with plant canopies. The system required monitoring and balancing of relative humidity, wind speed, temperature and carbon dioxide concentrations. Collected and analyzed soil, water, and plant samples and modeled fate and transport of the chemicals. Presented research at national and international meetings and published research in scientific journals.

14. *Continued*:

Name of Individual	Title
Xuannga (Sonia) Mahini	Principal Toxicologist/ Director of Risk Management Services
Personnel Classification/Level (*Reference Attachment IV and 16*)	Area of Expertise
Professional Level V	Risk Assessment/Toxicology (Human Health, Ecological, Radiological, Physical)
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*)	Education
Senior Toxicologist	B.A., Biochemistry, 1987 M.P.H., Environmental Health Sciences, Toxicology, 1989 Ph.D., Engineering/Risk Analysis, (expected 2006)

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
16	16	

Employment History

	Firms Name	Start Date	End Date
1.	UC Berkeley School of Public Health, UC Davis, California Department of Health Services, City College of San Francisco (Part-time)	02/82	03/90
2.	Western Consortium for Public Health (Part-time)	08/87	03/90
3.	PRC Environmental Management, Incorporated	04/90	09/93
4.	Ogden Environmental and Energy Services, Incorporated	10/93	04/98
5.	The IT Group/ICF Kaiser International	05/98	06/99
6.	Electric Power Research Institute (EPRI), West Region	07/99	05/03
7.	SECOR International Incorporated	06/03	Present
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Executive Summary of Career Highlights

Ms. Mahini is a Principal Toxicologist/Director of Risk Management Services with 16+ years of technical excellence in large-scale, multi-million dollar environmental and energy programs. She has extensive experience in managing multiple, large-scale projects, from strategic planning to plan implementation. Ms. Mahini is able to communicate credibly and effectively with clients, regulatory agencies, and internally at all levels in the organization. Her industry experience includes: environmental, commercial/industrial, defense, energy, and federal/state/local agencies.

Directing the SECOR risk management service (RMS) group across all SECOR office to provide risk assessment support to all SECOR clients. Trained and developed professional risk assessors at various SECOR offices in human health, ecological, radiological, and physical risk assessments.

In charge of the 10-year $220 million Navy CLEAN contract for a facility-wide risk assessment of U.S. Navy properties in Hawaii. Responsible for training and directing staff to perform 14 Human Health Risk Assessments (HHRAs) for multi-million dollar remedial investigation/feasibility studies (RI/FS) projects. Chemicals of concern included toxic metals, polychlorinated biphenyls (PCBs), pesticides, volatile and semi-volatile organic compounds (VOCs and SVOCs), and ordnance compounds. Developed the risk assessment approach and wrote the generic text for all risk assessment reports. Conducted a comprehensive analysis of sub-acute exposure to lead. Performed a comprehensive HHRA for an asbestos-contaminated site, including air emission and air dispersion modeling for a construction scenario. Based on the results of the analysis, proposed a no-action alternative for this site. Also conducted environmental impact assessments to evaluate transformer sites with PCB impacts, the facility-wide dry well network, and the regional groundwater system.

Senior Toxicologist responsible for preparing a HHRA to assess the impact of vapor intrusion into a subdivision adjacent to a closed municipal landfill in Tucson, Arizona. Contaminants evaluated included halocarbons, primarily TCE and PCE, and constituents of gasoline.

Brief Resume Continued

Senior Toxicologist responsible for performing air emission and dispersion modeling during active lead-contaminated soil removal at the two former trap and skeet ranges at Williams Air Force Base. Performed blood lead modeling to estimate health-based levels for lead in the air for protection of nearby adult and child residents, using both modeling data and measured air concentrations.

Project Toxicologist for the federal-lead Hassayampa Superfund Site in Arizona (EPA Region IX). Assisted the Project Manager in directing technical staff and performed the majority of the HHRA tasks, including hazard evaluation, data interpretation, exposure assessment, air modeling, toxicity assessment, risk characterization, and report preparation. Chemicals of potential concern at the site were tetrachloroethene (PCE) and its degradation products, along with a large suite of other chemicals (toxic metals, VOCs, SVOCs, etc).

Prepared a comprehensive baseline risk assessment work plan for a Northdrop Grumman manufacturing facility in Springfield, MO, based on the Risk Assessment Guidance for Superfund's (RAGS) methodology. Performing and directing human health and ecological risk work for this site. Developed and negotiating cleanup goals for TCE and copper in a karst system. Performing and directing human health and ecological risk work for this site.

Performed a baseline health risk assessment for the Hamilton Sundstrand's Hulett Lagoon site in the City of Camdenton, Missouri, with TCE contamination in a karst aquifer system.

Prepared the risk assessment report, provided risk spreadsheet templates, and directed SECOR staff to perform a risk assessment for Kaiser Hospital's site in Downey, California. This risk assessment involved extensive indoor air modeling effort (Johnson and Ettinger model) using soil gas data.

Performed a risk-based corrective action (RBCA) for a former Conoco-Phillips (CP) site in Berkeley, CA. Proved that the underlying groundwater is not a potential potable source and ran the BIOSCREEN model to show that site contaminants will not migrate to the San Francisco Bay.

Select Publications/Presentations

Mahini, X. 2005. Author of three Entries on Asbestos, Risk Management, and Diethylstilbestrol; co-author of the US Department of Agriculture entry in the 2005 Elsevier' *Encyclopedia of Toxicology, 2nd Edition*.

Mahini, X., Vagt, W. 1998. Comparative Physical Risk Analysis for Cost-Effective Environmental Management: The Teller Fencing Case Study. Poster presented at the Society of Environmental Toxicology & Chemistry (SETAC) 19th Annual Meeting (November 15-19, 1998, Charlotte, NC).

Mahini, X. P., Wang. E., Noblet, G., Herwig, J., & Sposato, K. 1998. Applying the Risk-Based Concept of Exposure Area for Cost-Effective Source Remediations - A Case Study. Invited oral presentation (within the Training Session entitled Elements of Reasonable Cleanup, presented by Dave Rice, Lawrence

Livermore National Laboratory) at the Eighth Annual West Coast Conference on Contaminated Soils & Ground Water (Conference Directors: E. J. Calabrese & P. T. Kostecki). March 8-12, Oxnard CA.

Mahini, X. P. 1998. How Reproductive Effects as Critical Toxicity Endpoints Affect Cleanup Goals Based on Carcinogenicity & Systemic Effects: A Case Study of Common Risk-Driving Chemicals at Hazardous Waste- & Petroleum-Contaminated Sites. Invited oral presentation (within the Training Session entitled Elements of Reasonable Cleanup, presented by Dave Rice, Lawrence Livermore National Laboratory) at the Eighth Annual West Coast Conference on Contaminated Soils & Ground Water (Conference Directors: E. J. Calabrese & P. T. Kostecki). March 8-12, Oxnard CA.

14. *Continued*:

Name of Individual Angus E. McGrath, Ph.D.	Title Principal Geochemist
Personnel Classification/Level Professional Level V	Area of Expertise Applied Soil and Aquatic Chemistry, Geochemistry, Environmental Remediation Technologies Research
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Technical Specialist – Geochemistry, Chromium Impact	Education B.A., Chemistry, 1985 Ph.D., Soil Chemistry, 1994

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
14	14	

EMPLOYMENT HISTORY

	Firms Name	Start Date	End Date
1.	Chevron Research & Technology Company	02/88	12/90
2.	University of California Berkeley, Department of Environmental Science, Policy & Management	08/90	01/94
3.	Lawrence Berkeley National Laboratory	01/94	08/97
4.	SECOR International Incorporated	08/97	Present
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Executive Summary of Career Highlights

Dr. McGrath has eight years of experience in the environmental consulting field as an Applied Chemist in both organic and inorganic chemistry and 14 years in environmental research chemistry. This experience has included project management, technical support, litigation support and field supervision of soil and groundwater remediation projects, and toxic trace element investigations. Projects he has managed have pertained to both soil and aquatic chemistry, including natural attenuation of chlorinated volatile organic compounds (VOCs) and petroleum hydrocarbons, geochemical modeling of mine waters, treatment of acid soils, *in situ* alkaline stabilization of heavy metals, chemical oxidation of VOCs, chemical reduction of VOCs, adsorption of benzene, heavy metal remediation in groundwater, toxic trace metal speciation in soils and waters, colloidal silica barrier stability, municipal waste discharges, and wastewater treatment and testing. Dr. McGrath has conducted presentations and taught courses on a number of topics for regulators, industrial clients, and professional development courses including natural attenuation, chemical oxidation and chemical reduction of VOCs, *in situ* chemical reduction of hexavalent chromium, and the fate and transport of contaminants in the environment. Dr. McGrath has 14 years of experience as a laboratory researcher, both in academia and industry where he has served as an expert in litigation, and as a team of technical reviewers for regulatory agencies evaluating organic and heavy metal contamination. Dr. McGrath is currently working on projects involving the natural attenuation of hexavalent chromium, petroleum hydrocarbons and chlorinated VOCs, Cr (VI) reduction in groundwater, chemical oxidation of petroleum and chlorinated VOCs, and modeling metal mobility and fate in aquifer materials. His selected project experience is presented below.

Principal Geochemist responsible for implementing full-scale chemical oxidation remediation of chlorinated solvent impacts at a manufacturing facility in northern California. Planned and directed a pilot test for assessing the field-scale effectiveness of *in situ* application of potassium permanganate to chemically oxidize the impacted groundwater. Also assisted in the development of a reactive wall barrier to remove chlorinated solvents from impacted groundwater, and to prevent off-site migration of the solvents plume. The pilot test results indicated that the initial remedial treatment could remove chlorinated solvents in the treatment area for up to nine months. After nine months had elapsed, chlorinated solvents reappeared due to transport of impacted groundwater from up-gradient source areas.

Brief Resume Continued

Principal Investigator for pilot-scale testing of Fenton's reagent treatment of a chlorinated solvent-impacted aquifer using a vertical mixing well technology at a manufacturing facility in Rhode Island. Responsible for conducting a technology and site assessment for the state-lead RCRA CORRACTS site. Soil and groundwater at the site had been impacted by volatile organic compounds (VOCs), primarily chlorinated solvents. The solvents were present as dense non-aqueous phase liquids (DNAPLs) and dissolved-phase constituents. Negotiated with the lead regulatory agency, ultimately securing approval to conduct this novel technology test.

Principal Geochemist for the feasibility study phase of a groundwater remediation project at an electronics manufacturing plant site in Scotland which has been impacted by chlorinated solvents and petroleum hydrocarbons. Responsible for evaluating the geochemistry and local hydrogeologic setting to determine which remedial alternatives would be most suitable and cost-effective for remediating the site.

Serving as consulting Geochemist on a project evaluating the potential for the application of a natural attenuation remedy at a chlorinated VOC site in Northern California. Developed and reviewed data collected using the approved Air Force Center for Environmental Excellence (AFCEE) protocol to determine the applicability of natural attenuation at the site. Conducted bioaugmentation/biostimulation bench scale study to evaluate the potential for the enhancement of natural attenuation using simple carbon food sources with and without microbial (Dehaloccoides ethogenes) amendments. Currently conducting a field biostimulation pilot study using a proprietary remedial mixture. Performing the work for a multinational corporation in Northern California.

Serving as consulting Geochemist selecting and installing a site-wide remedial system to degrade chlorinated VOCs and petroleum hydrocarbons at a former circuit board fabrication facility. Evaluated and implemented the installation of an ozone sparging and soil vapor extraction system to remove and oxidize VOCs in groundwater below the proposed multinational corporate headquarters. Performing the work for a multinational electronics manufacturer in Northern California.

Served as consulting Geochemist on a project to remove trace level antimony and arsenic contamination from drinking water for a water supply system in Utah. Developed a water treatment technology that was able to decrease antimony from 20 micrograms per liter (µg/L) to less than 2 µg/L in order to meet USEPA water quality requirements. Tested and implemented the technology on a pilot scale. Changes in regulatory requirements have reduced the pressure on full-scale implementation. Performed the work for a small municipality in one of the Salt Lake City ski valleys.

Served as consulting Geochemist on the review of the applicability of different remedial alternatives for the destruction of chlorinated VOCs in a fractured bedrock aquifer in New Jersey. Evaluated chemical treatment, natural attenuation, and physical methods for efficacy in treating the chlorinated VOC plume. Performed the work for a multinational personal hygiene products manufacturer in New Jersey.

Serving as consulting Geochemist on a project evaluating the impact of oxygen infusion technologies for the augmentation of fuel oxygenate biodegradation. Performing a remediation technology comparison for the *in situ* remediation of methyl tertiary butyl ether (MTBE) at a fuel terminal in Northern California for a major oil company.

14. Continued:	
Name of Individual Philip A. Platcow, C.I.H.	Title Director of Industrial Hygiene and Health & Safety Services; Vice President
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level V	Area of Expertise Industrial Hygiene; Health and Safety Management
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Senior Industrial Hygienist	Education B.S., Environmental Health Technology, 1984 M.S., Work Environment Industrial Hygiene, 1997

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
21	21	Certified Industrial Hygienist in Comprehensive Practice, American Board of Industrial Hygienists, 1989

Employment History

	Firms Name	Start Date	End Date
1.	Union Carbide Corporation/KTI Chemicals, Incorporated	02/84	05/85
2.	Hygienetics, Incorporated	05/85	08/93
3.	Sedgwick James of New England, Incorporated	08/93	11/98
4.	SECOR International Incorporated	11/98	Present
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Executive Summary of Career Highlights

Director of Industrial Hygiene and Health & Safety Services for SECOR International Incorporated (SECOR), responsible for working with clients to address their health & safety, and environmental issues while pursuing their business strategies. Also responsible for setting and implementing health & safety policy for SECOR employees. Architect for SECOR's Loss Prevention System, which reduced OSHA recordable incidents by more than 70% in one year. The OSHA recordable incident rate has remained low for several years.

Senior Hygienist responsible for developing and implementing a corporate health, safety, and environmental program that exceeded federal regulations for a Fortune 50 subsidiary which manufactured semi-conductor-grade chemicals. Responsible for four plants across the U.S. Interacted with company officers and coordinated activities to reduce risk and minimize insurance premiums. Conducted plant audits to measure the level of compliance with OSHA, EPA, and exemplary company standards. Managed hazardous waste, emergency response, and permitted discharges in compliance with federal and state regulations. Developed a prototype Customer Safety Program for client workplaces.

Director of Industrial Hygiene responsible for supervising a 40-person staff. Also acted as 401K trustee for a regional environmental and industrial hygiene consulting firm. Managed client projects in complex environments. Performed industrial hygiene and safety compliance audits and monitoring in hospitals, universities, and manufacturing plants in US, Mexico, and Greenland. Specialized in multi-site companies including AT&T domestic and international telecommunications plants. Trained hundreds of individuals in industrial hygiene and safety courses.

Senior Hygienist responsible for developing and implementing strategies to reduce risk in environmental health and safety for numerous client companies for an international risk management firm. Strategies included Health, Safety, and Environmental Integration Programs in union and non-union companies. Educated senior management to expand involvement and investment

Brief Resume Continued

in environmental, health, and safety programs while remaining sensitive to funding and staffing pressures.

Provided technical assistance for manufacturing/chemical firms in the U.S., Canada and Mexico. Clients have included Fortune 50 companies, as well as regional tool manufacturers and lighting firms. Performed national and international auditing, workplace exposure and environmental risk assessments. Developed policies and procedures manuals, and conducted training programs to exceed OSHA and EPA requirements. Performed indoor air quality and ergonomics surveys. Developed laser safety programs for Tufts University Veterinary School. Responded to OSHA citations and inquiries. Also answered the needs of mining and quarrying clients.

Worked in power generating facilities as well as with crews in natural gas distribution systems. Consulted with the management of companies in selecting the most practical and cost effective means of reducing employee exposures and maximizing productivity. Tasks included: Health and safety integration; health and safety program and facility audits; emergency preparedness programming and planning; industrial hygiene personal air quality monitoring for contaminants such as arsenic, silica, total particulate, diesel exhaust, etc.; noise monitoring for personal and area exposure levels; program development including respiratory protection, personal protective equipment, hearing conservation, etc.; confined space entry consulting; employee training on various health and safety topics; asbestos management consulting; industrial hygiene monitoring during demolition and reconstruction of stacks; and engineering control option assistance.

Managed a Specialist-in-Residence Program for a food processing and receiving plant. Worked with multi-disciplinary teams to address noise and chemical exposures by improving facilities and procedures. Developed a health and safety integration program involving 60 plant staff and the Environmental Health and Safety Manager. Reduced injuries and illnesses by 50%.

Conducted a wide range of U.S. Postal Services and U.S. Department of Veterans Affairs (VA) projects in the New York Metropolitan and New England regions. Most projects dealt with asbestos-containing materials (ACM) management, including investigative surveys, abatement design, contract document preparation, contractor bidding and review, review of job submittals and abatement monitoring. Projects often required detailed design to enable ACM abatement to proceed without interrupting the facility operations. Projects covered more 25 facilities ranging in size and complexity from one-room offices to the South Boston and Providence Bulk Mail Centers, and VA Hospital in West Roxbury, Massachusetts.

Developed a training program to comply with the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) refresher training requirements. Conducted this training for major oil company remediation engineers and managers, as well as hundreds of SECOR employees.

Conducted lead exposure assessments for several employers who produce printed circuit boards for the computer industry, and lead-containing markers for the radiographic industry. Survey reports included analytical findings and recommendations for improved handling procedures and reduced employee exposure.

Managed the asbestos and lead-based paint issues for Boston Central Artery/Third Harbor Tunnel project. Tasks included 200 building surveys, abatement design, contract documents, construction and air quality monitoring, and government interaction. Earnings exceeded $1 million in three years.

Conducted reviews of toxicological products. Evaluated material safety data sheets and product data. Performed literature searches to advise clients on how to minimize exposures.

14. *Continued:*

Name of Individual Bradley A. Barquest, R.G.	Title Principal Hydrogeologist/Senior Groundwater Modeler
Personnel Classification/Level Professional Level VI	Area of Expertise Geology, Contaminant Hydrogeology, and Groundwater Modeling
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Technical Specialist – Hydrology & Groundwater Modeling	Education B.S., Geology, 1986 M.S., Geology, (Hydrogeology option), 1989

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
19	16	Registered Geologist or Professional Geologist (1996; MN, WI, 1995; MO, 1996; IL, 1996; IN, 1996; and KS, 1998)

EMPLOYMENT HISTORY

	Firms Name	Start Date	End Date
1.	U.S. Geological Survey, Water-Resources Division (Summers; later full-time)	08/83	09/86
2.	Delta Environmental Consulting, Incorporated	03/89	04/91
3.	SECOR International Incorporated	04/91	Present
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Executive Summary of Career Highlights

Principal Investigator responsible for reviewing and evaluating hydrogeologic investigation activities and groundwater flow modeling performed by the City of Tucson and its groundwater consultants for the state-lead Superfund Broadway-Pantano WQARF Site in Tucson, AZ. Also responsible for reviewing the impact of releases of halogenated hydrocarbons (halocarbons), particularly tetrachloroethene (PCE), to groundwater on the nearby City main water supply wellfield. The City and its environmental engineering consultants had designed an Early Response Action (ERA) and were developing a final corrective action design for a Western Containment System (WCS). Thoroughly reviewed the groundwater flow model construction, input parameters, calibration processes, and results with respect to the model's ability to provide reliable predictions concerning hydraulic containment and contaminant mass removal for the proposed WCS.

Principal Hydrogeologist for a U.S. Environmental Protection Agency (EPA) federal-lead Superfund remediation project at a 170-acre municipal solid waste landfill (MSWLF) in Florida. The site was being remediated under an EPA Record of Decision (ROD), as well as a Florida State Consent Agreement for Landfill Closure. Responsibilities included directing the evaluations of subsurface geologic conditions, hydro geologic characteristics, and surface water vs. aquifer interactions. Also responsible for creating a numerical groundwater flow model using MODFLOW® (USGS Modular Flow Model) to evaluate and develop a hydraulic barrier capable of precluding further contaminant migration into an adjacent mangrove nature preserve.

Senior Hydrogeologist responsible for managing hydrogeologic assessment activities for a federal-lead Superfund remedial action to mitigate the impacts of a halocarbon groundwater plume on a municipal well field in Clare, Michigan. Responsibilities included reviewing and evaluating existing subsurface data, designing and executing aquifer pumping tests, assisting in the implementation of interim remedial measures (IRMs) to protect non-impacted municipal water supply wells, and assisting in the design of a hydraulic barrier (extraction well network) to preclude further plume migration. Member of the negotiating team that successfully petitioned the EPA to amend the ROD and Administrative Order issued under Section 106 of CERCLA.

Brief Resume Continued

Provided expert testimony for the defense of a Federal District Court cost recovery litigation. The action was initiated to recover costs associated with a groundwater investigation and remediation actions. The plaintiffs alleged that investigation and remediation costs for the multi-layer aquifer system located in Minneapolis, Minnesota were the results of VOC migration from our client's facility. Results of the litigation are still pending.

Managed and coordinated the design, installation, and sampling of groundwater monitoring networks for seven municipal landfills in Wood County, Wisconsin, for the United States Geological Survey. Coordinated sampling programs of monitoring well networks to attain representative background water quality data in a pre-disposal setting. Coordinated private water supply well sampling programs to attain county-wide background water quality base-lines for monitoring well network comparisons. Directed the installation of 55 monitoring wells, securing Right-of-Entry agreements, coordination of well drilling activities, collection and evaluation of physical data, and evaluation of analytical results.

Managed and coordinated geophysical (electromagnetic survey) investigations of shallow groundwater flow systems surrounding municipal landfills in Wood County, Wisconsin, and at the Winnebago Indian Reservation in Brown County, Wisconsin, for the United States Geological Survey. Project involvement included project management, site activity coordination, data acquisition, and data interpretation. The purpose of these investigations were horizontal and vertical delineation of fugitive plumes migrating from paper processing sludge pits. Data generated by electromagnetic surveys were critical for the strategic placement of monitoring well networks and identifying appropriate well screen intervals.

Served as a Project Hydrogeologist for a RI/FS at a wood treating plant in east-central Minnesota. As a team Project Hydrogeologist, responsibilities included devising sampling and field methods to characterize the extent of contamination (pentachlorophenols, phenols, and dioxins) at this Superfund site.

Managed the investigation of soil and groundwater contamination for a nationally-based insurance company (petroleum hydrocarbon) by means of soil borings, monitoring wells, and dye trace testing within the fractured and karst aquifer systems surrounding Winchester, Kentucky. Project responsibilities included oversight of the remedial investigation and subsequent remedial response program. Data obtained from soil boring and monitoring well indicated that contaminant migration remained near the site and was limited in areal extent. To verify this scenario, a dye trace test was initiated to evaluate potential contaminant migration pathways within the fracture flow dominated aquifer system utilizing Rhodamine WT acid red 388 dye and fluorescein acid yellow 73 dye.

Managed and coordinated geophysical (near surface seismic refraction) investigations within the Balcones Fault Zone of Central Texas. Project involvement included management, site coordination, instrument calibration, data acquisition, data interpretation, and report generation. The purpose of these investigations was to define a structurally complex, near-surface bedrock horst-and-graben system and associated fracture network, and assess their influence on surface water and groundwater flow systems.

Served as a Project Hydrogeologist for the evaluation of a large-scale dewater program associated with the proposed copper and zinc mining operation in Crandon, Wisconsin. As a team Project Hydrogeologist, responsibilities included confirmation and validation of MODFlow groundwater modeling data inputs and results of the proposed dewatering program.

Managed and coordinated remedial investigations at numerous commercial and industrial facilities. These investigations have involved soil vapor surveys, soil sampling, groundwater monitoring well installation and sampling, design and implementation of numerous aquifer pumping tests, and numerical and analytical modeling. Activities included all phases of remedial investigations from problem identification to complete evaluation of contaminant extent, magnitude, and fate in soils, groundwaters, and surface waters.

Coordinated geophysical (resistivity) investigation of an abandoned, unlined landfill in alluvial sediments of the Brazos River flood plain of Central Texas. As a Project Hydrogeologist, responsibilities included project management, utilization of existing monitoring well networks for lithological and hydrogeological control, site coordination, data collection, data interpretation, and report generation. The purpose of this investigation was to delineate the horizontal and vertical extent of a known fugitive contaminant plume.

14. *Continued:*

Name of Individual	Title
Brent L. Douglas, P.E.	Principal Engineer
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level VI	Area of Expertise Environmental Remediation System Design and Implementation
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Senior Engineer	Education B.S., Civil Engineering, 1991 B.S., Physical Science/Earth Science, 1987

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
13	13	Registered Professional Engineer, Michigan (No. 6201042021), 1996 Registered Professional Engineer, Oklahoma (No. 18730), 1998

Employment History

	Firms Name	Start Date	End Date
1.	Bucher, Willis & Ratliff, Incorporated	08/87	08/88
2.	Burns & McDonnell, Incorporated	03/89	05/91
3.	Geraghty & Miller, Incorporated	08/91	10/93
4.	SECOR International Incorporated	10/93	Present
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Executive Summary of Career Highlights

Project Manager responsible for supervision the evaluation of a dual-phase extraction system at a former service station in Houston, Texas that had petroleum hydrocarbon impacted soil and groundwater, as well as LPH. The system consists of 7 dual-phase extraction wells that utilized pneumatic pumps for groundwater extraction, a positive displacement blower for soil vapor extraction, an air stripper for groundwater treatment and vapor phase carbon for off-gas treatment for the air stripper and the extracted soil vapor. The performance evaluation identified the need for a thermal oxidizer to handle the off-gas from the SVE system to reduce vapor phase carbon costs that limited the operation of the SVE system. The thermal oxidizer was installed and the site cleanup objectives were reached within 12 months.

Project Engineer responsible for evaluating the performance of a dual-phase extraction system at an active service station in Arlington, Texas. The site had been impacted by motor fuel releases to soil and groundwater, as well as liquid-phase hydrocarbons (LPH). The system consisted of 15 dual-phase extraction wells that utilized pneumatic pumps for groundwater extraction, a positive displacement blower for soil vapor extraction, an air stripper for groundwater treatment, and liquid-phase or vapor-phase granular activated carbon for off- gas treatment for the air stripper and the extracted soil vapor, respectively. The performance evaluation identified 12 wells that could be deactivated because cleanup criteria were met and the remediation system was rebalanced to focus on the three remaining areas.

Principal Engineer responsible for design of an air sparge (AS/SVE) remediation system in Livonia, Michigan consisting of 105 air sparge AS points and 22 SVE. The remediation system was designed to assist the flexibility for isolating specific areas of the contaminant plume, as necessary. The extracted soil vapor is treated with vapor phase granular activated carbon prior to discharge under a Michigan Department of Environmental Quality (MDEQ) Air Quality Division permit.

Project Engineer responsible for designing a closed-loop bio-vent and air sparge system for treatment of hydrocarbon impacted soil and groundwater in Michigan. Depth to groundwater was approximately 40 feet below ground surface, and soil conditions consisted of an assortment of sand, gravel, and boulders from ground surface to below the water table. System involved low

Brief Resume Continued

flow aquifer sparging, soil vapor extraction and soil vapor re-injection after treatment.

Principal Design Engineer responsible for supervising the design and installation of a soil vapor extraction (SVE) system to remediate natural gas condensate at a gas plant in Bowie, Texas. The release covers an area of approximately 15 acres and the SVE system was designed to remediate the site in approximately three years. A combination of new and existing vapor extraction (VE) wells was used to extract 500 cubic feet per minute (cfm) of soil vapors using a positive displacement blower for extraction and a thermal oxidizer for off gas treatment. SECOR personnel designed and installed the system which included nearly 5,000 feet of buried piping that connected to a manifold at a centralized equipment compound. SECOR is performing the operation-and-maintenance (O&M) of the system, quarterly groundwater sampling and remedial progress reporting.

Principal Engineer responsible for supervising the Remedial Design/Remedial Action (RD/RA) phase of a federal-lead Superfund site in Ohio where halogenated hydrocarbon (halocarbons) had impacted the groundwater in the municipal well field. Through successful negotiations, both the soil inorganic (toxic metals) and organic (halocarbons) clean-up criteria were modified to less stringent Site-Specific Targets. Modification of the Record of Decision (ROD) included the elimination of soil washing as a remedy for the remediation of inorganic-impacted soil. This was replaced by spot excavation and disposal. Successful negotiations and re-engineering of several phases of the RD/RA Work Plan produced a cost savings of approximately $850,000 for the client. Supervised AS/SVE field pilot testing and supervised the design and installation of the full-scale remediation system, including air sparging, soil vapor extraction and groundwater extraction and treatment.

Project Engineer responsible for performing AS/SVE pilot testing and 72-hour aquifer pump test at a 44-acre automotive parts manufacturing site in Michigan impacts by halocarbons. Designed a remediation system consisting of SVE and groundwater pump-and-treat (GWP&T) in two separate source areas. Utilized four groundwater recovery wells to extract approximately 125 gpm and provide groundwater containment and capture to prevent further off-site migration. The extracted groundwater was treated by air stripping prior to discharge to surface water under an NPDES permit obtained for the project. The AS/SVE system was installed in source areas to accelerate the reduction of the mass of chlorinated hydrocarbons. The extracted soil vapor was treated with vapor-phase activated carbon prior to discharge to the atmosphere.

Project Engineer for the design and installation of GWP&T and SVE system for a hydrocarbon-impacted site in Michigan. An upper clay zone with limited hydrocarbon impacts was underlain by a saturated sand zone with the impacted groundwater within 2 feet of the bottom of the upper clay zone. Remedial strategy involved drawing down the water table by GWP&T and soil venting methods thereby removing the adsorbed contamination tied up in the capillary fringe and vadose zone soil. Addressed the upper clay zone impacts via a high-vacuum, liquid-ring pump for SVE. The groundwater was treated with an air stripper and granular activated carbon polishing prior to discharge to the sanitary sewer under a POTW permit obtained for the project. The soil vapor was treated with a catalytic oxidizer that was permitted through the Air Quality Division of the MDEQ.

Project Engineer responsible for installing and operating a closed-loop, in-situ bioremediation system to address hydrocarbon contamination from an underground storage tank (UST) release in Michigan. Achieved a significant cost savings by treating the soil in place, as opposed to removal and hauling to a landfill. System consisted of approximately 7 SVE laterals and 6 injection laterals. Utilized a 1 hp regenerative blower to circulate air in the subsurface and add nutrients.

Project Manager responsible for supervising the completion of source area pilot testing that included; a chemical oxidation bench scale study, 2 aquifer pump tests, 6 soil vapor extraction pilot tests, a monitoring and natural attenuation evaluation and a soil vapor survey. Supervised the design and installation of two groundwater remediation systems installed to address two separate areas of groundwater impacted with chlorinated VOCs in one area and chlorinated VOCs and LNAPL in the other area.

14. *Continued*

Name of Individual	Title
Theresa A. Kalaghan, RG, CEM	Senior Hydrogeologist/Senior Project Manager
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level VI	Area of Expertise Site Assessment, Hydrogeology, Remediation Implementation, and Project Management
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Project Manager, Project Hydrologist	Education B.S., Geology, 1985 M.S., Geology, 1987

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
18	18	Registered Geologist, Arizona (1991) and California (1992) Certified Environmental Manager , Nevada (1996) OSHA 40-Hour and 8-Hour Hazardous Waste Operations

Employment History

	Firms Name	Start Date	End Date
1.	Environmental Strategies Corporation	12/87	03/89
2.	Delta Environmental Consultants	03/89	11/92
3.	Dames & Moore	11/92	10/95
4.	Delta Environmental Consultants	10/95	05/98
5.	ATC Associates	05/98	04/01
6.	Holguin Fahan & Associates	04/01	11/04
7.	SECOR International Incorporated	11/04	Present
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Executive Summary of Career Highlights

Ms. Kalaghan is a Registered Geologist with 18 years of professional experience in environmental assessment and remediation. She has directed numerous site assessment and remediation projects that included large, complex sites with contaminated soil, multiple aquifers, and commingled groundwater plumes of petroleum hydrocarbons, chlorinated hydrocarbons, and metals at sites located in Arizona, California, New Mexico, Nevada, and several southeastern states. Ms. Kalaghan's responsibilities include project management and developing and implementing cost effective and innovative methods for investigating and remediating soil and groundwater contamination. Clients for these projects included major oil companies, petroleum jobbers, military facilities, state agencies, county agencies, and municipalities.

UST Removal
Managed and/or conducted over 75 underground tank removal and tank upgrade projects in Arizona, California, New Mexico, North Carolina, South Carolina, Virginia,, and Pennsylvania. The projects involved tank and piping removal, soil sampling, and preparation of tank closure reports.

Site Assessment
Managed and/or conducted over 200 site characterization assessments at underground storage tank and motor fuel surface spill sites in several states including Arizona, California, Nevada, and New Mexico. The sites were located in a variety of geologic terrains including fractured bedrock, cavernous limestone, and alluvium. The depth to water ranged from a few feet to several hundred feet below ground surface. Investigative techniques included soil sampling, surface water sampling, monitoring well installation and sampling, aquifer tests, cone penetrometry, direct push sampling, geophysical surveys, fracture trace analysis, and dye tracing.

Project Manager for site assessment and remediation projects in fractured bedrock terrain at an Army National Guard facility in Phoenix. Contaminants included gasoline, diesel fuel, and jet fuel. Applied geophysical methods to investigate the topography of the bedrock surface and locate water-bearing zones in the bedrock. The geophysical methods employed included high-resolution resistivity, seismic reflection, seismic refraction, induction logging, and borehole imaging.

Brief Resume Continued

Project Manager for the state-lead Broadway-Pantano WQARF Site remedial investigation/feasibility study (RI/FS) in Tucson, Arizona where a 1.5-mile-long PCE plume has impacted portions of the City of Tucson Central Wellfield. Responsible for evaluating the effectiveness of an interim containment remedy that consists of multiple groundwater extraction and injection wells; completing the remedial investigation phase of the project; and assessing health risks in residential areas bordering the closed landfilled areas.

Senior Hydrogeologist for the state-lead East Central Phoenix WQARF Early Response Actions at sites in Phoenix, Arizona where several dry cleaning operations have contributed to PCE contamination in groundwater. Responsible for technical oversight of Remedial Investigations and Early Response Actions involving assessment and remediation of PCE and TCE.

Project Manager for a study at a waste management facility in Chandler, Arizona to evaluate the likelihood of adverse impact to a nearby city water supply well if a solvent release were to occur. Well construction records, pump test records and local hydrogeology were evaluated to estimate the radius of influence of the supply well.

Project Geologist and Quality Assurance Manager for an Aquifer Protection Permit project at a large copper mine, Arizona. Responsible for preparing Sampling and Analysis Plans, Quality Assurance Project Plans, and Field Sampling Plans. Validated laboratory data. Audited analytical laboratories and selected the primary laboratory contractor. Provided training to Phelps Dodge employees in field sampling methods, quality assurance program management and data validation.

Quality Assurance Manager for several remedial investigation projects at military facilities in Arizona, conducted under the Installation Restoration Program. Responsible for preparing Sample and Analysis Plans and Quality Assurance Project Plans and implementing quality assurance programs.

Soil and Groundwater Remediation
Managed feasibility testing and remediation system design projects at over 100 underground storage sites in Arizona, California, and Nevada. The projects involved pilot testing, corrective action plan development, and remediation system design.

Managed soil and groundwater remediation projects at over 100 underground storage tank sites in Arizona, Nevada, and California. The contaminants of concern included aromatic hydrocarbons, fuel oxygenates, and NAPL. Remediation technologies applied included excavation, soil vapor extraction, air sparging, multiphase high-vacuum extraction, pump and treat, above-ground bioreactors, NAPL removal, biosparging, monitored natural attenuation, enhanced natural attenuation, and risk assessment. Sites were situated in a variety of geologic terrains including fractured bedrock, multiple aquifer systems, and alluvium.

Groundwater Monitoring
Project Manager for extensive groundwater monitoring programs at the federal-lead Superfund Motorola 52nd Street Facility in Phoenix, Arizona. The project required quarterly sampling for halocarbons at approximately 300 locations, including conventional monitoring wells and multi-port Westbay monitoring wells. Responsible for property access, quality assurance program development and implementation, data evaluation and validation, reporting, database management, and laboratory management. Evaluated single-well rising head test data for approximately 200 tests, the aquifer test data for a large-scale (900 gallons per minute, gpm) aquifer test and Operable Unit (OU) performance to determine the effectiveness of plume capture.

Water Resources and Aquifer Protection Permitting
Project Coordinator for a complex municipal water supply project in Tucson, Arizona. Managed a multi-disciplinary project team involved in developing a series of plans for reducing the City's reliance on groundwater and obtaining an Assured and Adequate Water Supply designation. The project involved legal, economic, engineering and hydrogeologic analysis of four plans that included treatment and delivery of Central Arizona Project (CAP) Water, blending CAP water and groundwater, artificial recharge of CAP water, and continued use of groundwater.

Project Manager for Aquifer Protection Permit projects for drywells at major oil company service stations and an Army National Guard facility in Arizona.

14. *Continued:*

Name of Individual	Title
Daniel W. Oberle, P.E.	Principal Engineer
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level VI	Area of Expertise Chemical Engineering, Biological and Chemical Reduction, Oxidation Reactions, Chemical Treatibility Studies
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Technical Specialist – Toxic Metals Impact	Education B.S., Chemical Engineering, 1988 Jurisprudence Doctorate (J.D.), Law, 2001

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
20	20	Registered Chemical Engineer (OH, 1995; MI, 1996; IN, 1996); Registered Attorney (OH, 2001)

Employment History

	Firms Name	Start Date	End Date
1.	Envirosafe Service of Ohio	1986	1988
2.	OHM	1988	1990
3.	Terra Vac	1990	1996
4.	SECOR International Incorporated	1996	Present
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Executive Summary of Career Highlights

Principal Engineer and Director of Research and Development for SECOR International Incorporated. Responsible for managing the treatibility testing laboratory in Sylvania, Ohio. The laboratory specializes in electrochemical processes using chemical and biological oxidation, reduction and fixation to transform contaminants into inert or insoluble by-products. Holder of several patents for remedial treatment processes. Performed treatment of hexavalent chromium at sites using electrochemical reduction with DC current, metabisulfite reduction, oxidizable organics, and calcium polysulfide salts. Performed testing for the State of Michigan to demonstrate the effectiveness of chromium reduction by dissolving metal reactions.

Project Manager responsible for designing, installing, and operating treatment systems for remediation at sites contaminated by organic and inorganic contaminants. Managed projects throughout the Midwest as well as the Midwest office and personnel for Terra Vac. Worked in research and development to advance new treatment technologies within the company. Technologies included enhancements to air-driven technologies, biological processes, and chemical oxidation and reduction processes. Co-inventor on a patent for chemical oxidation processes in combination with air-driven technologies. Experimented with treatment technologies for in-situ fixation of chromium with sulfite salts.

Team Member of an emergency response team for US Environmental Protection Agency (EPA) Region III. Project responsibilities included designing chemical treatment methodologies and treatment systems for abandoned and orphaned sties under the EPA Superfund contract. Treated stored and abandoned chemical wastes, lagoon sludges, and waste waters. Treatment technologies that were used included chemical precipitation, neutralization, chemical oxidation, chemical reduction stabilization, solidification, dewatering operations, and biological processes. Contaminants treats included all RCRA toxic metals, volatile and semi-volatile organics, aldehydes, inorganic and organic sulfides, mineral acids and bases, and soluble organic acids. Also designed metabisulfite treatment systems for hexavalent chromium at an abandoned tanning operation and at an operating plating facility.

14. *Continued*:

Name of Individual Clifford R. Pollock, R.G., P.E.		Title Principal Engineering Geologist
Personnel Classification/Level Professional Level VI		Area of Expertise Engineering Geology, Contaminant Hydrogeology, Hazardous Waste Management
Proposed Project Role *(e.g. Project Manager, Project Engineer, Project Hydrologist, etc.)* Project Manager/Senior Geologist/Senior Engineer		Education B.S., Geological Engineering, 1972 M.S., Geology (Engineering Geology), 1982
Years of Experience 33	Years of Related Experience 20	Registrations and Certifications Held and Year Received Registered Civil Engineer (CA, 1987; AZ, 1990); Registered Geologist (CA, 1998; AZ, 1990)Certified Engineering Geologist (CA, 1989); Certified Hydrogeologist (CA, 1999); Certified Engineering Manager (NV, 1991)

EMPLOYMENT HISTORY

	Firms Name	Start Date	End Date
1.	U.S. Army Corps of Engineers	07/72	07/80
2.	Becon Construction Company	08/82	02/83
3.	GMC Associates, Incorporated	08/83	09/84
4.	IT Corporation	09/84	08/89
5.	Western Technologies, Incorporated	08/89	11/92
6.	SECOR International Incorporated	11/92	Present
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Executive Summary of Career Highlights

Mr. Pollock is a Registered Geologist and Professional Engineer with over 20 years of experience in the environmental consulting and construction engineering industries. He has a strong background in engineering geology, geological engineering, military (civil) engineering, geotechnical engineering, and earthmoving construction management. This broad-based expertise enables him to provide senior technical oversight for all aspects of soil and groundwater assessment and/or remediation projects. He has managed complex, large-scale soil and groundwater remediation projects; devised assessment and remediation strategies for refineries, tank farms, iron works foundries, and factories; maintained numerous major client accounts; and participated in business development and strategic planning activities for the past 16 years. Mr. Pollock has conducted and/or managed hundreds of site characterization assessments, site remediation projects, environmental site assessments, and/or geotechnical soil investigations in Arizona, California, Colorado, Illinois, Indiana, Massachusetts, Michigan, Missouri, Nevada, New Jersey, New Mexico, Ohio, Texas, Washington, and Wisconsin. He has been involved in federal- and state-lead Superfund projects, state-lead RCRA-equivalent projects, Brownfield restoration projects, landfill engineering projects, upstream tank farm/refinery projects, and downstream underground storage tank (UST) management programs (the latter two for numerous major oil companies). Mr. Pollock functions as a senior technical reviewer, quality control manager, senior project manager, and lead investigator. In these various capacities, he has been involved in the preparation and/or review of many of the site characterization/remediation-related proposals, work plans, project reports, and similar project deliverables that are generated by the offices that he supports. Mr. Pollock provides continuing direction, training, and technical guidance to project managers and to staff- and project-level geologists and hydrogeologists for offices in SECOR's Western Region. Past consulting experience has included geotechnical engineering foundation studies, coal surface mine exploration, coal surface-mined land restoration groundwater investigations, and water resources evaluations. Representative project experience is presented below.

Served as Project Manager for soil and groundwater assessments and remedial activities at a hotel casino/resort maintenance yard in Stateline, Nevada that had been impacted by leaking diesel fuel USTs. The remediation program included groundwater pump-and-treat with oil/water separation and carbon adsorption; free-product skimming; and in-situ bioremediation/soil flushing. The project attracted high-level attention from the public, the state legislatures of California and Nevada, the Nevada Division of Environmental Protection (NDEP), and the Tahoe Regional Planning Authority.

Brief Resume Continued

Almost 80 percent of the estimated total recoverable free-phase diesel fuel was recovered successfully over a two-year period. The project entailed accelerated site characterization activities; remedial design planning; and remedial system procurement, permitting, installation, and operation-and-maintenance (O&M).

Served as Project Hydrogeologist or Project Manager for more than 50 projects where groundwater assessments were completed but aquifer testing was not required (for instance, sites where deep-seated vadose zone contamination was present but groundwater was not impacted). These project sites included almost a dozen light industrial manufacturing facilities (located throughout the greater Los Angeles metropolitan area), a leaking xylene UST tank farm at a pesticide manufacturer (in Commerce, California), approximately one dozen gasoline service station sites (throughout southern California), approximately one-half dozen car rental facilities (in Arizona and Nevada), and a dozen dry cleaning facilities (scattered throughout the southwest United States, Colorado, and central Texas).

Principal Hydrogeologist responsible for completing the characterization of a commingled gasoline-impacted groundwater plume in a sole-source, fractured bedrock aquifer in a historic mining district town in southern California. Prepared a life-cycle estimate for aquifer restoration and a CSM report. Devised and implemented a 24-month plume capture study to evaluate the effectiveness of sustained well field pumping to maintain hydraulic containment of the commingled groundwater plume. Oversaw several drilling crews during the installation of nested shallow and deep soil vapor extraction well fields at four separate source release areas. Prepared numerous remediation status reports.

Field Manager for remedial investigations at the federal-lead Lake Sandy Jo Landfill Superfund site in Gary, Indiana under CERCLA. Responsible for implementing all elements of the field sampling plan, and for assuring adherence to the provisions of the quality assurance project plan. Installed a network of groundwater monitoring wells into the alluvial aquifer and the underlying dolomite aquifer at the site. Directed the collection of soil, soil gas, surface water, leachate and groundwater samples for analysis under the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program. Following the completion of the 9-month field investigation, primary author of the Draft RI Report.

Hydrogeological Consultant to the ADEQ Southern Regional Office (SRO) in support of its oversight of the state-lead Superfund Silverbell Landfill and Los Reales Landfill Water Quality Assurance Revolving Fund (WQARF) Site projects in Tucson, Arizona. Both landfills have released halogenated hydrocarbons (halocarbons) and landfill gas (LFG) constituents into the vadose zone and saturated zone. For the Silverbell WQARF Site, primary author of technical memorandums for a groundwater data gap evaluation and for review of a pilot test work plan for enhanced in situ bioremediation (ETSB) and for yearly evaluations of EISB pilot test programs. For the Los Reales Landfill WQARF Site, primary author of a groundwater data gap evaluation technical memorandum.

Technical advisor for soil vapor extraction/air injection (SVE/AI) vadose zone remediation at the Landfill Operable Unit (LOU) of the Broadway-Pantano WQARF Site in east-central Tucson. Primary author of the Draft Semi-Annual LOU Performance Monitoring Report. Also wrote the Draft LOU Shallow Probe Monitoring Report.

Principal investigator for identifying the most probable of multiple possible sources of liquid-phase hydrocarbons at a former gasoline service station. Used Gore Sorber technology to evaluate each pathway and identify the most likely source (which proved to be a buried stream channel passing beneath the former tank pit of a different gasoline station and entering the Site).

Project Hydrogeologist for soil and groundwater assessments at a former paint manufacturer in Tucson, Arizona. Drilled and sampled soil borings and well borings, backfilling the former and completing the latter as groundwater monitoring wells. Participated in the design of proposed remedial systems, including in-situ thermal desorption and steam stripping of volatile organic compounds (VOCs) in subsurface soils above a 110-foot deep perched water table.

Senior Technical Advisor for investigation and/or remediation of several hundred hazardous waste sites in Arizona, California, New Mexico, and Nevada during the last 13 years. Responsibilities include review of reports and work plans, including corrective action plans and remedial design documents, for the following: technical content, soundness of conclusions and recommendations, and correct presentation of data.

14. Continued:

Name of Individual	Title
Phillip A. Schneider, P.E.	Managing Principal/Principal Engineer
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level VI	Area of Expertise Environmental Remediation System Design and Implementation
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Project Manager/Senior Engineer	Education B.S., Mechanical Engineering, Design Emphasis, 1985 M.B.A., Business Management, 1991

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
19	17	Mechanical Engineer (AZ 1990) A-General Engineering Contractor Qualifying Party (AZ 2001)

Employment History

	Firms Name	Start Date	End Date
1.	Caterpillar Incorporated	03/86	06/90
2.	Western International University (Masters Degree)	07/90	10/91
3.	John Hancock Financial	10/91	09/92
4.	Delta Environmental Consultants, Incorporated	09/92	05/98
5.	SECOR International Incorporated	06/98	Present
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10.			

Executive Summary of Career Highlights

Mr. Schneider has 17 years of professional design engineering and consulting experience. He has been responsible for managing subsurface contamination projects including remediation design (air sparging, soil vapor extraction, bio-venting, free product recovery, and groundwater pump-and-treat), Environmental Site Assessments, risk assessments, subsurface drilling, well installation (groundwater monitoring, air sparge, and soil vapor extraction well installation), soil and groundwater sampling, air quality, wastewater sampling projects, and the development of spill prevention control and countermeasure plans. The remedial systems Mr. Schneider has designed have been for the removal of chlorinated solvents and petroleum hydrocarbons in soil and groundwater. Mr. Schneider's current responsibilities include Managing Principal responsibilities for the SECOR Tempe, Arizona office. In this capacity he is responsible for quality assurance and control for all aspects of engineering and consulting projects, as well as budgeting and health and safety program implementation. His consulting project experience is summarized below.

Principal/Sr. Project Manager for providing underground storage tank (UST) management services to major oil companies at their gasoline dispensing facilities throughout Arizona. Responsible for completion of site characterization activities and remedial activities at dozens of known or suspected leaking underground storage tanks (LUST) sites. Directed soil and groundwater assessments to determine the nature and extent of motor fuel hydrocarbon releases to the subsurface at each site. SCA activities typically included subsurface drilling and soil sampling, well installation (groundwater monitoring wells, air sparge (AS) wells, and SVE wells), groundwater sampling, air quality sampling, and waste handling. Also assisted in the remedial design planning process, either as the project engineer or as a senior technical reviewer. Designed and constructed single- and multi-component remediation systems for impacted soil and groundwater at numerous sites. These systems included various combinations of free product recovery, bio-venting, air sparging, soil vapor extraction, and groundwater pumping and treatment. Passive biodegradation for both groundwater and soil remediation also has been successfully utilized, when its use was warranted.

Brief Resume Continued

Principal Engineering Manager for a UST fueling system upgrade project at the central plant facility of a major university in Arizona. The system provided fuel to power generators to supply electricity for the university complex. Oversaw construction of a temporary fueling system to assure an uninterrupted supply of fuel to the generators throughout the system upgrade project.

Project manager responsible for implementing UST management programs for several dozen motor fuel dispensing facilities in Arizona and New Mexico. Planned and directed more than 20 UST system removal operations, as well as preliminary site assessments and follow-up SCAs at LUST sites. Clients included major oil companies, and state, county and municipal agencies.

Project Manager responsible for removal of petroleum dispensing systems at a truck stop in New Mexico. Multiple environmental concerns were present prior to and discovered during the removal process. An environmental subsurface investigation was initiated, discovering that the sewer leach field was acting as a perched aquifer. New Mexico Environmental Department policy was to treat all groundwater as drinking water aquifers, thus requiring cleanup. Sampled the perched aquifer and analyzed the sample for total dissolved solids. Based on the results, the project was ruled exempt from the cleanup requirements. The soil site assessment was completed, evaluated for health risk, and is under review for closure.

Served as Project Manager responsible for establishing site-specific remediation standards and the submittal of a Health Risk Assessment to ADEQ for a paving/utility company in Tucson, Arizona.

Panel Member and Chairperson on UST Technical Appeal Panel. Appointed by the Governor of Arizona to assist the Administrative Law Judge on the technical issues of hearings between the ADEQ and a UST responsible party. Duties entail third-party reviews of the technical documents, listening to legal counsel case presentations, questioning witnesses, and providing case recommendations to the Administrative Law Judge.

Senior Remediation Engineer for on-going assessment and remediation of the Landfill Operable Unit (LOU) of the state-lead Broadway-Pantano Water Quality Assurance Revolving Fund (WQARF) Site in east-central Tucson, Arizona. Provided senior technical review of the adequacy of design and operation of the existing soil vapor extraction/air injection (SVE/AI) system at Broadway North Landfill. Also reviewed and assisted in the development of a work plan to increase the SVE/AI system's effectiveness and efficiency which was implemented successfully. Senior reviewer of the technical memorandums prepared to document these various activities. Formerly responsible for daily coordination with the ADEQ Southern Regional Office (SRO) Project Manager, project oversight, files management, and project billing.

Principal Engineer responsible for designing an AS/SVE system to operate in conjunction with an in-situ groundwater pumping/recirculation system to remediate chlorinated solvents in the soil, soil gas and groundwater at a turbine parts manufacturer in Tempe, AZ. The system has satisfactorily cleaned up impacted soil, soil gas and groundwater in the source area (a former waste solvents UST) in a 1.5-year period.

Project Manager responsible for planning and engineering oversight of two point source emission tests, and subsequent air modeling to evaluate the handling capacity of the current emission controls at the emitting facilities. The existing emission control technology was shown to be adequate to handle the increased production capacity. Also managed the emission inventory of the same facility, the results of which were used to justify exemption of the facility from Title V Air Permitting.

Principal Engineer responsible for the preparation of Spill Prevention Control and Countermeasure (SPCC) plans and Installation Spill Contingency Plans (ISCPs) for two Arizona Army National Guard facilities. Responsible for reviewing all facility operations, recommending engineering controls, and recommending modifications of facility operations. Primary author of the SPCCs and of the ISCPs. Also prepared a similar SPCC plan for the campus of a major university in Arizona.

Project Manager for wastewater discharge engineering projects at a major cosmetics manufacturer and a truck leasing facility both located in Phoenix. Responsible for planning and implementing a wastewater monitoring programs to evaluate facility compliance with an existing municipal sanitary sewer discharge permit (for the cosmetics facility) or the feasibility for direct discharge of wastewater to the municipal sanitary sewer system (for the truck leasing facility).

14. *Continued:*

Name of Individual	Title
Steve Strait, P.G., C.E.G., C.H.G.	Principal Hydrogeologist
Personnel Classification/Level (*Reference Attachment IV and 16*) Professional Level VI	Area of Expertise Groundwater Flow-and-Transport Modeling, Contaminant Hydrogeology, Hydrogeologic Investigations
Proposed Project Role (*e.g. Project Manager, Project Engineer, Project Hydrologist, etc.*) Senior Groundwater Modeler	Education B.S., Geology, 1974 M.S., Geological Engineering, 1978

Years of Experience	Years of Related Experience	Registrations and Certifications Held and Year Received
29	29	Professional Geologist (CA, 1998); Certified Engineering Geologist (CA, 1990); Certified Hydrogeologist (CA, 1997)

Employment History

	Firms Name	Start Date	End Date
1.	Rockwell International Incorporated	1978	1988
2.	EMCON Associates	1988	1989
3.	SECOR International Incorporated	1989	Present
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Executive Summary of Career Highlights

Mr. Strait has over 29 years of experience in conducting and managing hydrogeologic investigations including groundwater flow and transport modeling, hydraulic testing, water supply assessments, groundwater contamination, and water resource studies. Mr. Strait is a California-registered geologist, -certified engineering geologist, and -certified hydrogeologist. He is a technical adviser, develops and reviews hydrogeologic programs, and has provided expert witness support on numerous hydrogeologic projects throughout California. Mr. Strait has performed groundwater modeling for assessing corrective action alternatives, designing petroleum hydrocarbon-impacted groundwater remediation systems, evaluating natural attenuation feasibility, and developing groundwater dewatering systems. He has extensive experience in hydraulic test design of high and low permeability materials, geophysical log interpretation, and piezometer design and installation. Mr. Strait has a thorough knowledge of hydrogeologic aspects of solid waste landfills, surface and sub-surface mining operations, industrial disposal facilities, and water supply well fields. Mr. Strait's project experience is presented below.

Principal Investigator for the hyrdrogeologic characterization, groundwater flow modeling, and solute transport modeling of a hexavalent chromium (Cr^{+6}) groundwater plume at a limestone quarry that had been utilized as a former kiln brick disposal area and as a municipal solid waste landfill (MSWLF). Evaluated the extent of Cr^{+6} migration in the shallow groundwater, and evaluated the feasibility of utilizing remediation by natural attenuation (RNA) as a remedial option. The latter activity entailed the use of time-series plots, sequence diagrams, and BIOSCREEN II groundwater modeling. Also modeled the impact of the hexavalent chromium to off-site water supply wells. Managed and developed a Corrective Action Plan for the landfill. The selected remedial option consisted of monitored natural attenuation and drainage controls at the landfill.

Project Manager responsible for assessing the Cr^{+6} impact to vadose zone soil and groundwater at a MSWLF in Kern County, California. Planned and directed hydrogeologic investigations, which included the collection of Geoprobe soil samples and Hydropunch® groundwater samples from the shallow alluvial aquifer, and the installation of several background groundwater monitoring wells. Results of the study indicated that the WSWLF landfill was not the source of the hexavalent chromium plume, whose origin was found to be regional in both soil and groundwater.

Project Manager responsible for a water resource investigation and groundwater flow modeling study in Hollister, California,

Brief Resume Continued

in support of an environmental impact report. The study evaluated the impact to groundwater from sand and gravel mining in the river bed. The study entailed installation of a groundwater monitoring well, hydraulic testing, assessing the groundwater flow regime, and modeling changes to the hydrogeologic system as a result of the mining operations.

Managed an Evaluation Monitoring Program at the Kern Valley Landfill to assess the nature and extent of volatile organic compounds (VOCs) downgradient of the landfill. Two additional wells were installed to assess the "zero" line of impact. However, the downgradient well contained Freon 12 and PCE at levels below the MCLs. A health risk assessment was conducted and BIOCHLOR modeling of the VOCs to evaluate the maximum possible extent of the VOCs. The results indicated the extent of VOCs would not reach the residential wells and would naturally attenuate with time. A public meeting was held to relay this information to the residents in the area.

Managed and developed a Corrective Action Program (CAP) for the Tehachapi Sanitary Landfill in Kern County. The project involved a natural attenuation feasibility assessment involving time series plots, SEQUENCE diagrams, BIOSCREEN II modeling, and assessment of selected natural attenuation parameters (e.g. Eh, DO); and an assessment of other remedial alternatives for the site. The CAP will consist of monitored natural attenuation and drainage controls at the landfill, which has been approved by the RWQCB.

Developed Amended Report of Waste Discharge to establish an Evaluation Monitoring Program for Balance Rock Solid Waste Disposal Site in Tulare County, California. The purpose is to assess the extent of mercury-impacted groundwater downgradient of the site. Two additional downgradient groundwater monitoring wells were installed to evaluate the extent of mercury-impacted groundwater. No additional mercury was detected in the groundwater. A deeper well will be installed at the landfill to assess the mercury's vertical extent.

Preparation of Solid Waste Assessment Test (SWAT) documents for the San Ardo, Lewis Road, Lancaster, Ben Lomond, Buena Vista, Jolon Road, Lemoore, Johnson Canyon, West Tehachapi, Taft, Mojave, Randsburg, and Wasco solid waste landfill sites in California. The purpose of the SWAT program at each of these landfills is to assess if the landfill is leaking hazardous constituents to the soil or groundwater.

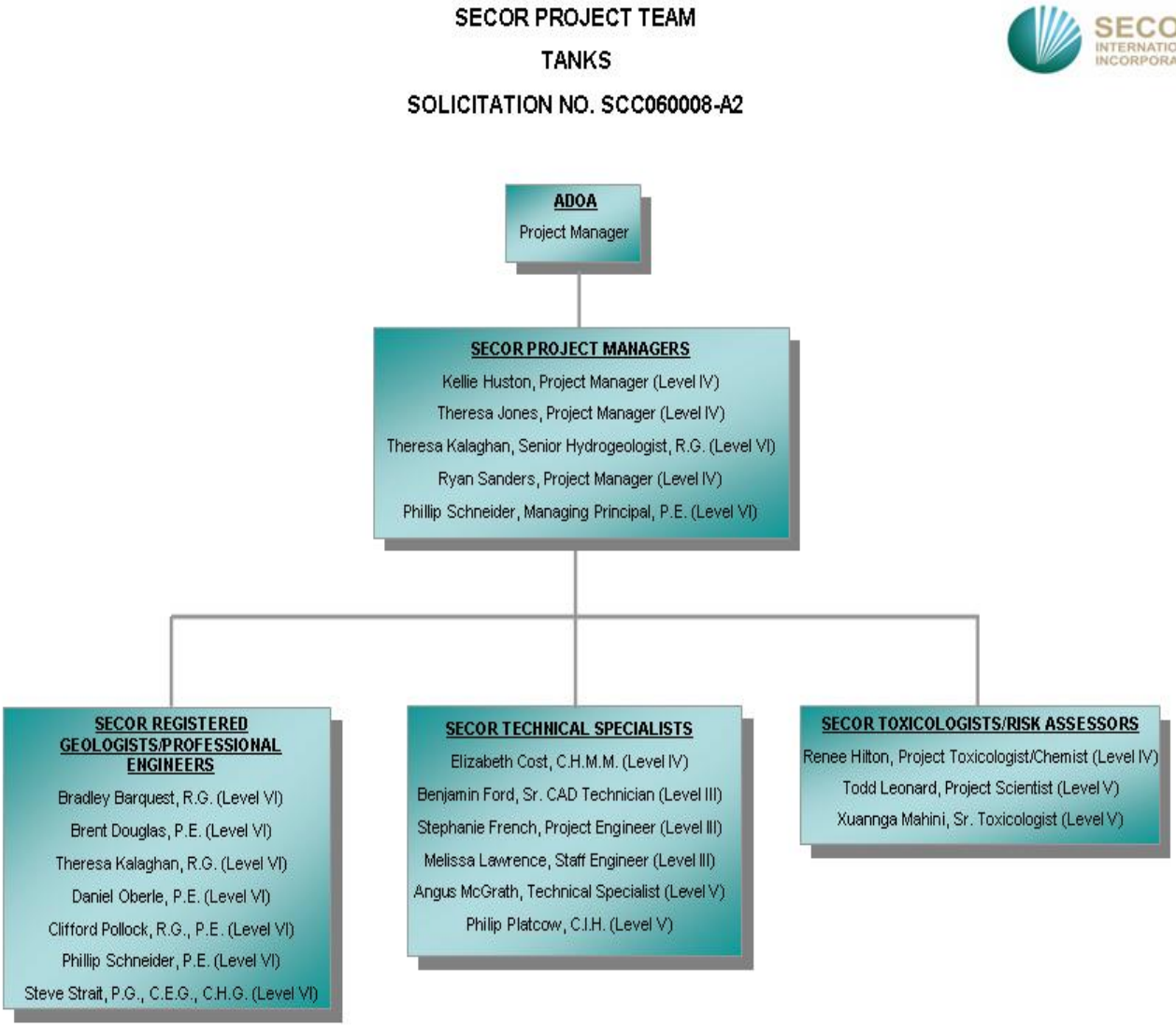
Performed water resources investigation and groundwater flow modeling for an environmental impact report in Hollister for San Benito County, California. The study evaluated the impact to the groundwater from sand and gravel mining in the river bed by installing a groundwater monitoring well, performing hydraulic testing, assessing the groundwater flow regime, and modeling changes to the hydrogeologic system as a result of the mining operations.

Managed hydrogeologic investigation of TCE impacted groundwater at the Talley facility at Newberry Park, California. Studies involved developing a groundwater flow model to assess the effectiveness of the current and planned groundwater extraction system.

Managed aquifer intercommunication studies at Hanford Site, Washington. The purpose of the studies was to determine the extent of radionuclide contamination in the uppermost confined aquifer from overlying low-level radioactive waste ponds.

Designed and installed multilevel piezometers to depths of over 4,000 feet for monitoring vertical and horizontal hydraulic head gradients. The tasks were part of the Basalt Waste Isolation Project, Hanford Site, Washington, for a high-level nuclear waste repository.

15. Provide an organizational chart showing the staffing and lines of authority for the key persons to be used under this contract.



G:\Proposals\2005\ADOA Tanks\Submittal\010306 Org Chart.ppt

16. Complete the Pricing Schedule in its entirety.

Support Services	Minimum Responsibilities, Qualifications and Education	Base Hourly Rate
Support Level I (Word Processor)	Responsibilities: Clerical, word processing, filing, general administration. Qualifications: Entry level, no experience restriction. Education: No education restriction.	**$ 40. 00**
Support Level II (Admin Assistant)	Responsibilities: Drafting, project manager's assistant, graphics. Qualifications: 1 - 2 years experience. Education: No education restriction.	**$ 45. 00**
Support Level III (Technical)	Responsibilities: Drafting supervisor, administrator supervisor, Senior Word Processor. Qualifications: 2 - 4 years experience. Education: No education restriction.	**$ 55. 00**
Field Services	**Minimum Responsibilities, Qualifications and Education**	**Base Hourly Rate**
Field Services Level I	Responsibilities: Closely supervised; conducts routine heavy labor during equipment installations; sampling/gauging, equipment maintenance. Qualifications: Entry level, 1 - 2 years of experience. Education: No education restriction.	**$ 40. 00**
Field Services Level II	Responsibilities: Limited supervision; occasional heavy labor; sampling/gauging, equipment installations, operations, troubleshooting. Qualifications: 2 - 4 years of experience. Education: No education restriction.	**$ 50. 00**
Field Services Level III	Responsibilities: Supervises on-site tasks such as system installations and operations, trouble shooting; technical advisor. Qualifications: 5 - 7 years of experience. Education: No education restriction.	**$ 55. 00**
Field Services Staff (Field)	Responsibilities: Limited supervision; experience specific to Scope of Work, independent field work and/or specialist. Qualifications: 7 - 9 years experience/special knowledge or expertise in field. Education: No education restriction.	**$ 60. 00**
Field Services Manager	Responsibilities: Overall supervision of field services staff; works with Project Managers on scheduling and coordination. Qualifications: 7 - 9 years of experience. Education: Bachelor of Science (BS) degree in applicable field of study or 15 plus years experience.	**$ 75. 00**
Professional Personnel *	**Minimum Responsibilities, Qualifications and Education**	**Base Hourly Rate**
Professional Level I	Responsibilities: Close supervision, routine tasks associated with environmental projects. Qualifications: 1 - 2 years of experience. Education: Bachelor of Science (BS) degree.	**$ 60. 00**
Professional Level II	Responsibilities: Collects and interprets data, report writing, provides project input. Qualifications: 2 - 4 years of experience Education: Bachelor of Science (BS) degree.	**$ 75. 00**
Professional Level III (Staff)	Responsibilities: Limited supervision, independent fieldwork, oversees Professional Levels I and II. Qualifications No. 1: 4 - 6 years of experience with Bachelor of Science (BS) degree. Qualifications No. 2: 1-2 years of experience with Masters degree.	**$ 80. 00**
Professional Level IV (Project)	Responsibilities: Manages projects of moderate scope, prepares cost estimates, supervises others. Qualifications No. 1: 6 - 8 years experience with Bachelor of Science (BS) degree or registration (PE or RG). Qualifications No. 2: 3 - 4 years of experience with Masters degree.	**$ 90. 00**
Professional Level V (Senior)	Responsibilities: Senior technical leader for environmental projects, QA of Project Plans, report review. Qualifications: 8 or more years of experience. Education: Advanced degree in field or registration (PE or RG). ***** Must meet both the experience & education requirements *****	**$ 115. 00**
Professional Level VI (Principle)	Responsibilities: Recognized registered professional, resident expert, expert testimony, QA of Project Plans and report review and/or Oversees and coordinates all levels of personnel, senior technical leader and has signature authority. Qualifications No. 1: 5 or more years in field project formulation, survey, excavation and technical reporting experience. Education No. 1: Doctorate degree and registration as PE or RG or Doctorate degree in Risk Assessment or Toxicology . Qualifications No. 2: 12 or more years of experience. Education No. 2: Advanced degree in field and registration as PE or RG or Advanced degree in Risk Assessment or Toxicology. Qualifications No. 3: 20 or more years in field project formulation, survey, excavation and technical reporting experience. Education No. 3: Bachelor of Science (BS) degree in applicable field of study. ***** Must meet both the experience & education requirements *****	**$ 125. 00**
*	There will be multiple technical disciplines that will fall under the descriptions of each professional level. A geologist, engineer, public involvement specialist, or environmental scientist with one year environmental experience would each fall under a Professional Level I.	
	Aggregate Hourly Rate Total:	**$ 970. 00**

17. Complete the Rental Equipment Pricing Schedule in its entirety.

Equipment Name	Price Per Day	Price Per Week	Price Per month
Air Sparge Compressor ≤ 15psi	**$ 150.00**	**$ 500.00**	**$ 1,200.00**
Air Sparge Compressor ≥ 15psi	**$ 150.00**	**$ 500.00**	**$ 1,200.00**
Bladder Pump	**$ 40. 00**	**$ 200. 00**	**$ 800. 00**
Centrifugal Pump	**$ 40. 00**	**$ 200. 00**	**$ 800. 00**
Combustible Gas Indicator (CGI)	**$ 50. 00**	**$ 250. 00**	**$ 1,000. 00**
Depth Specific Sampler	**$ 75. 00**	**$ 375. 00**	**$ 1,500. 00**
Disposable Bailer (each)	**$ 5. 00**	**NA**	**NA**
Dissolved Oxygen Meter	**$ 50. 00**	**$ 250. 00**	**$ 1,000. 00**
Electric Catalytic Oxidizer ≤ 250cfm	**$ 1,000. 00**	**$ 2,000. 00**	**$ 4,000. 00**
Flame Ionization Detector (FID)	**$ 100. 00**	**$ 500. 00**	**$ 2,000. 00**
Flow Through Cell	**$ 40. 00**	**$ 200. 00**	**$ 800. 00**
Generator ≤ 6kw	**$ 50. 00**	**$ 250. 00**	**$ 1,000. 00**
Hand Auger w/Slide Hammer Sampler	**$ 25. 00**	**$ 125. 00**	**$ 500.00**
Interface Probe – Oil/Water	**$ 50. 00**	**$ 250. 00**	**$ 1,000. 00**
Lower Explosive Limit/Oxygen Meter (LEL/O2)	**$ 50. 00**	**$ 250. 00**	**$ 1,000. 00**
Peristaltic Pump	**$ 25. 00**	**$125.00**	**$ 5,000.00**
Photoionization Detector (PID)	**$ 100. 00**	**$ 100. 00**	**$ 1,000.00**
pH Temperature and Conductivity Meter	**$ 15.00**	**$ 75. 00**	**$ 300.00**
Portable Flow Meter - Water	**$ 40. 00**	**$ 200. 00**	**$ 800.00**
Portable Pilot Test Unit (includes trailer, anemometer, blower/compressor, vacuum/pressure gauges, pitot tubes, generator, miscellaneous fittings, power cords and plugs.			
AS Pilot Test Unit	**$ 1,000. 00**	**$ 2,100. 00**	**$ 4,100. 00**
SVE Pilot Test Unit	**$ 1,200. 00**	**$ 2,600. 00**	**$ 5,000. 00**
Pressure Transducer, Cable and Data Logger	**$ 170. 00**	**$ 850. 00**	**$ 3,400. 00**
Submersible Pump w/Controller	**$ 50. 00**	**$ 250. 00**	**$ 1,000. 00**
Thermal/Catalytic Oxidizer 250cfm	**$ 1,300. 00**	**$ 3,100. 00**	**$ 4,200. 00**
Thermal/Catalytic Oxidizer 500 cfm	**$ 2,000. 00**	**$ 3,600. 00**	**$ 5,000. 00**
Vehicle	**$ 75. 00**	**$ 375. 00**	**$ 1,500. 00**
Water Level Indicator	**$ 15. 00**	**$ 75. 00**	**$ 300. 00**

18. Use this space to provide any additional information or description of resources (including any computer design capabilities) supporting your firm's qualifications for the proposed contract.

SECOR was established in 1989 to address environmental problems with timely and cost-effective remedial actions. Today, SECOR has developed into a full-service environmental consulting firm with over 800 employees in 55 offices located throughout the United States (see SECOR 18 Continued 1-Office Locations). Our approach to solving environmental problems is unique. First, we are solution oriented and strive to identify and understand environmental issues as quickly and efficiently as possible so that effective solutions can be readily enacted. Second, we maintain effective interdisciplinary project operations. Project managers coordinate teams of professionals with diverse experience in a broad range of specialized areas of science and engineering. This coordinated effort provides cross-checking of project work to achieve effective, broad-based solutions. Last, we are a dynamic company that continues to adapt to changing demands in the environmental marketplace. We take the long view in our business, with an emphasis on building for tomorrow and ensuring that our client's needs are met in the future. SECOR has the project staff and the experience to meet the aspect of the ADOA Tanks Contract. A chart depicting the firms experience is included as SECOR 18 Continued 2-Experience and Capabilities.

SECOR recognizes that solutions to solving environmental problems often have engineering and development challenges and these challenges require an unbiased evaluation of both proven and innovative technologies and the implementation of a cost-effective approach. We work aggressively on behalf of our clients to develop cost-effective strategies that guide the project toward a successful outcome by identifying client needs as the first step and throughout each step in our projects.

SECOR has a history of working successfully with regulatory agencies to develop and implement acceptable environmental solutions. Since the beginning, SECOR has provided services to satisfied clients on thousands of successful projects. We have developed a solid client base that includes numerous Fortune 500 companies, local, state, and federal agencies, and established environmental lawyers. We have a reputation in the environmental field for providing our clients with quality consulting services that solve difficult environmental and engineering problems in a timely and cost-effective manner.

SECOR has long-term working relationships with Chevron, BP-ARCO, 7-Eleven, and Conoco Phillips. Through these relationships and others, SECOR has evolved into a result oriented provider of services. SECOR has the ability to apply the economy of scale from their portfolio of sites to the rest of their UST clients. SECOR uses our long history in risk based clean-up, site remediation, due diligence, and liability analysis to bring sites to closure faster, saving our clients money. We implement innovated proven technologies to further reduce the costs and risks.

SECOR prides itself on its turn-key ability to undertake the assessment and the remediation in complex and/or large-scale hydrostratigraphic settings, including fractured bedrock and multiple aquifer systems. SECOR conducts its own research into feasible treatment technologies at its Geochemistry Testing Laboratory in Sacramento, California. SECOR staff, including many of the local SECOR-Tempe staff, possess experience in remediating halocarbon and hydrocarbon-impacted groundwater sites using in-situ and ex-situ enhanced bioremediation, air stripping, air sparging (including ozonation), carbon adsorption, hydrogen peroxide injection, ultraviolet peroxidation, potassium permanganate injection, zero-valent reactive walls (funnel-and-gate), and high-vacuum dual-phase extraction (HVDPE), among other technologies. SECOR's multi-phase feasibility study (FS) process for effectively addressing the need to restore an aquifer includes pilot testing (slug testing, aquifer pumping tests, and remedial technologies pilot testing), bench-scale testing, field-scale testing, and finally full-scale implementation testing. These design plans are suitable for issuance to outside contractors for actual implementation, although SECOR is fully qualified to function as its own remediation general contractor. An example of a soil vapor extraction air sparge remedial design package has been included as SECOR 18 Continued 3- Design Package.

SECOR develops GIS applications that enable us and our clients to manipulate, analyze and present information that is tied to a spatial location (see SECOR 18 Continued 4-Environmental GIS). Large quantities of environmental information can be processed, viewed and mined through a user-friendly graphical interface. SECOR is also experienced in the use of Global Positioning System (GPS) devices, computer aided design and drafting, cartographic services, and specialized graphics preparation.

Please Note: SECOR personnel have completed every item listed in "Experience Profile Code" of this document over the past five years.